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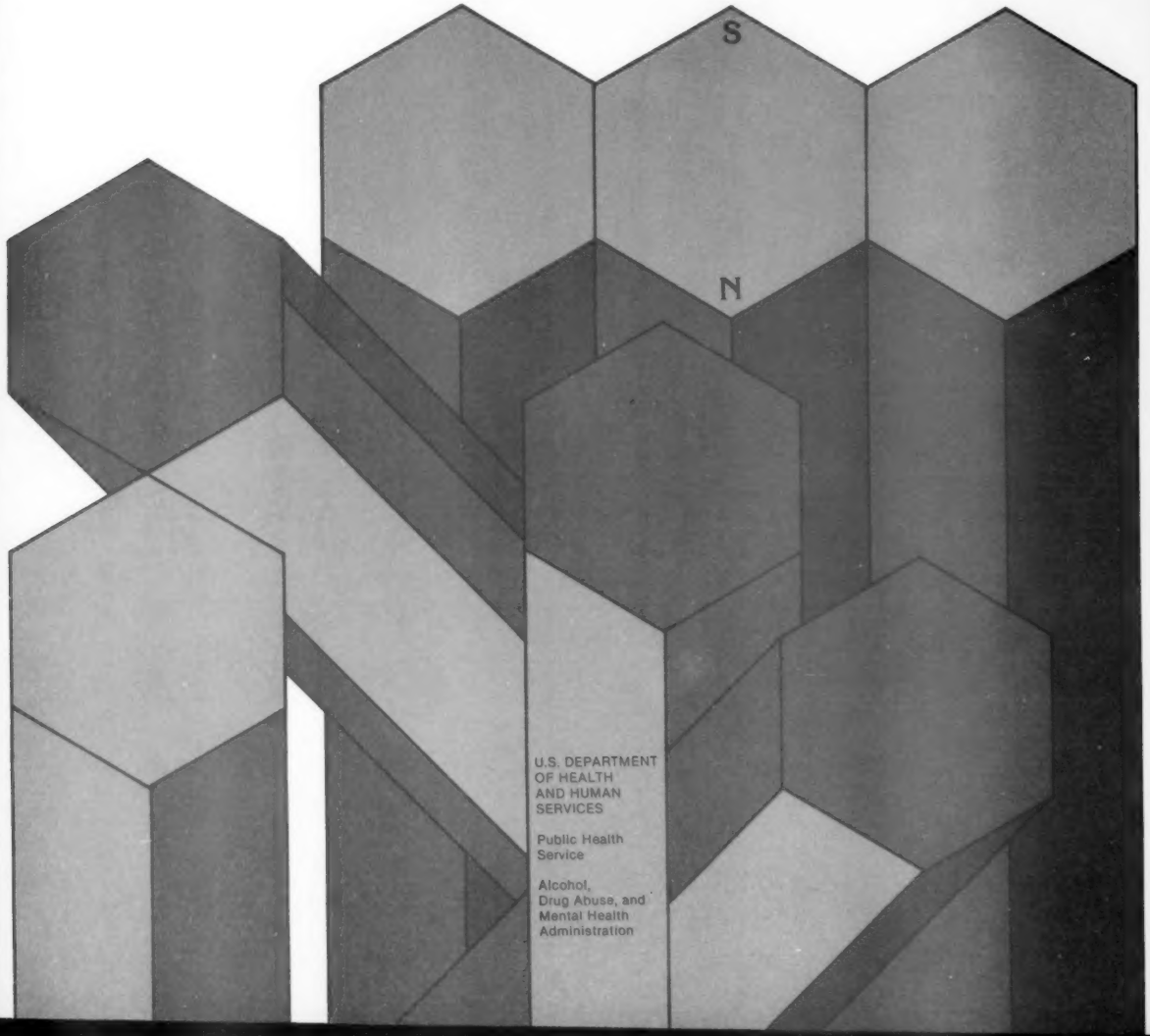

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Carrie Lee Rothgeb, *Editor*
Bette L. Shannon, *Managing Editor*

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ABSTRACTS

PRECLINICAL PSYCOPHARMACOLOGY

01 CHEMICAL SYNTHESIS, ISOLATION AND CHARACTERIZATION

000999 Chalmers, R. J.; Bennie, E. H. Queen's College, 1 Park Drive, Glasgow G3 6LP, Scotland **The effect of fluphenazine on basal prolactin concentrations.** Psychological Medicine (London). 8(3):483-486, 1978.

The effect of fluphenazine on basal human prolactin (hPRL) concentrations was studied in 10 male schizophrenics who had received fluphenazine treatment for at least 6 months, on 10 male alcoholics before and during the first week of fluphenazine treatment, and in eight alcoholics at daily intervals before and after treatment. Results were compared with basal hPRL concentrations in 17 healthy male controls. Investigations involved giving fluphenazine (Modecate) by intramuscular injection and taking blood samples at appropriate intervals by venepuncture. Basal hPRL concentrations were significantly increased in the schizophrenics. The alcoholics showed a significant rise in hPRL concentrations after fluphenazine but there was considerable variation in hPRL levels between individual patients. Most patients showed marked elevation of daily hPRL levels with peak concentrations occurring 5-6 days after the injection. Results demonstrate that fluphenazine elevates basal hPRL levels. It is concluded that the variation between levels of individual patients merits further investigation. 14 references. (Author abstract)

001000 Fulcrand, Pierre; Berge, Gilbert; Noel, Anne-Marie; Chevallet, Pierre; Castel, Jean; Orzalesi, Henri. Laboratoire de Pharmacie Chimique, Avenue Charles Flahaut, F-34060 Montpellier Cedex, France **/Hydrazides as monoamine oxidase inhibitors: Hansch and Free-Wilson correlations./** Hydrazides inhibiteurs de la monoamine oxydase: correlations de types Hansch et Free-Wilson. European Journal of Medicinal Chemistry (Paris). 13(2):177-182, 1978.

Some hydrazides of phenoxyacetic acids were synthesized and tested as monoamine oxydase inhibitors. Quantitative structure/activity relationships were established with Hansch and Free-Wilson methods. The importance of substitution in the oxidability of the hydrazide group is noted. 19 references. (Journal abstract)

001001 Kopin, Irwin J.; Lake, Raymond C.; Ziegler, Michael. Laboratory of Clinical Science, National Institute of Mental Health, Bethesda, MD 20014 **Plasma levels of norepinephrine.** Annals of Internal Medicine. 88(5):671-680, 1978.

An edited transcript of a Combined Clinical Staff Conference at the Clinical Center of NIMH, held in Bethesda, Maryland, February 1977 is presented. Some of the factors that influence alterations in the plasma level of norepinephrine occurring in disease states and treatment with drugs are described. The proportion of norepinephrine reaching the circulatory system before being metabolized varies with the type of nerve ending effector junctions in the tissue. Plasma levels of norepinephrine also will fluctuate because of rapid metabolism rates and environmental, emotional, and endogenous stimuli provoking a sympathetic response. Results of research with animals are cited to show how these factors must be carefully controlled in any experiments in which plasma catecholamines are to be studied. Sympathetic nervous activity and the ability of the sympathetic nervous system to respond to a uniform stimulus are studied in hypertensive and normotensive subjects. A survey of the plasma levels of norepinephrine in a variety of neurologic disorders is given. 87 references. (Author abstract modified)

001002 Lahti, Robert A.; Gay, David D.; **Barsuhn, Craig.** Upjohn Company, Kalamazoo, MI 49001 **Inhibition of 3H-spiroperidol binding by an endogenous material from brain.** European Journal of Pharmacology (Amsterdam). 53(1):117-118, 1978.

Two fractions from bovine brain inhibited tritiated spiroperidol binding. One fraction has a molecular weight between 2500-4000 and the other between 500-700. These findings suggest that there may be endogenous ligands for the antipsychotic binding sites. Their size and other preliminary degradation data suggest that they are peptides. The possibility that nonspecific binding effects were responsible for the observed findings cannot be excluded, however. 5 references.

001003 Langlois, M.; Guillonneau, C.; Vo Van, T.; **Maillard, J.;** Lannoy, J.; Nguyen, H. N.; Morin, R.; Manuel, C.; **Benharkate,** M. no address **/Synthesis and antidepressant properties of 2-amino-4-phenyl-delta1-pyrroline derivatives./** Synthese et proprietes antidepressives de derives de l'amino-2 phenyl-4 delta 1-pyrroline. European Journal of Medicinal Chemistry, (Paris) 13(2):161-169, 1978.

The 2-amino-4-phenyl-delta1-pyrroline derivatives, with various substituents on phenyl nucleus, pyrroline ring, or amino group were synthesized from corresponding 2-pyrrolidinones. Various methods were used to obtain 2-pyrrolidinones. It was found that 2-amino-delta1-pyrrolines presented some of the pharamacological properties of antidepressants. 2-amino-5-methyl-4-phenyl-delta1- pyrroline was submitted to a more complete study and its cis and trans isomers were obtained and tested comparatively. 22 references. (Journal abstract)

001004 Milstien, Sheldon; Kaufman, Seymour. NIMH, 9000 Rockville Pike, Bethesda, MD 20014 **Preparation of an antiserum to sheep liver dihydropteridine reductase. (Unpublished paper)** Bethesda, MD, NIMH 1978, 5 p.

The preparation of an antiserum in rabbits to sheep liver dihydropteridine reductase is described. Dihydropteridine reductase was determined with spectrophotometric assay, purified by electrophoresis injected (0.5mg) into rabbits. Serum was collected either prior to immunization (control) or 10 days after the last injection. The antiserum was shown to cross react with dihydropteridine reductase from sheep, cow, rats, and humans. 7 references.

001005 Stock, B.; Spiteller, G. Sektion Massenspektrometrie, Universitat Ulm/Donau, D-7900 Ulm, Germany **/The metabolism of antiparkinson drugs: an example of competitive hydroxylation./** Der Metabolismus von Antiparkinson-Mitteln: ein Beispiel fur konkurrierende Hydroxylierungen. Arzneimittel Forschung (Aulendorf). 29/1(4):610-615, 1979.

The metabolism of the antiparkinson drugs triheyphenidyl, pridinol, and biperiden was investigated. A graduate tendency for hydroxylation in the different structural elements was revealed. If alicyclic, saturated heterocyclic and aromatic ring systems are present in one compound (pridinol), and the alicyclic ring system is attacked predominately. The amount of metabolites with hydroxy groups in the saturated heterocyclic rings appears much lower, and no hydroxylation takes place in the aromatic ring. In drugs without alicyclic ring systems (biperiden), the saturated heterocyclus is attacked preferentially, and some phenolic metabolites are formed. An arrangement of falling hydroxylation tendency is presented that offers a prediction of the hydroxylation tendency of other compounds. 8 references. (Journal abstract modified)

001006 Stuper, A. J.; Jurs, P. C. Research Laboratories, Rohm and Haas Co., Spring House, PA 19477 **Structure-activity studies of barbiturates using pattern recognition techniques.** Journal of Pharmaceutical Sciences. 67(6):745-751, 1978.

The relationship between molecular structure and duration of depressant effects for barbiturates was investigated. A data set of 160 5,5'-disubstituted barbiturates with various acyclic substituents was coded, using 47 numerical descriptors including fragments, substructures, environmental descriptors, and molecular connectivity indices. All descriptors were derived directly from the connection tables of the barbiturates. Using an interactive error/correction feedback algorithm, linear discriminant functions were developed that could dichotomize the data set with respect to several thresholds separating longer from shorter acting compounds. Feature selection was used to focus on the relatively few structural descriptors sufficient to support linear separability. The importance of these descriptors and the utility of the technique are discussed. Predictive abilities of approximately 94% were obtained for known barbiturates of the same general molecular types. 33 references. (Author abstract)

001007 Zetler, G.; Cannon, D.; Powell, D.; Skrabanek, P.; Vanderhaeghen, J. J. Abteilung fur Pharmakologie, Medizinische Hochschule Lubeck, D-2400 Lubeck, Germany **Crude substance P from brain contains a cholecystokinin-like peptide.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 305(2):189-190, 1978.

The subfractions Fa, Fb, and Fc of crude substance P (SP) preparations made from human and bovine brains were analyzed for substance P and the C00H-terminal octapeptide of cholecystokinin (CCK-8). In bioassays of synthetic peptides, the guinea pig vas deferens reacted specifically to SP and the gallbladder to CCK-8. Radioimmunoassays and bioassays indicated that most of the SP activity was present in Fb, while Fc contained mainly CCK-8 activity. Varying results were obtained with Fa. Results indicate that the pharmacologically-active principle of Fc is CCK-8 or a closely related peptide. 14 references. (Author abstract modified)

02 DRUG DEVELOPMENT (PRECLINICAL SCREENING)

001008 Beer, Bernard; Klepner, Claire A.; Lippa, Arnold S.; Squires, Richard F. Central Nervous System Research Dept., Lederly Laboratories, Pearl River, NY 10965 **Enhancement of 3H-diazepam binding by SQ 65,396: a novel anti-anxiety agent.** Pharmacology Biochemistry and Behavior. 9(6):849-851, 1978.

In an investigation of the antianxiety action of SQ 65,396, the effect of the drug on the binding of 3H-diazepam to its brain specific receptors was studied. The enhanced binding of 3H-diazepam which was found, is attributed to an increase in the affinity for the ligand, without a change in the number of 3H-diazepam binding sites. This action of SQ 65,396 may mediate its antianxiety effects by affecting the action of an endogenous modulator of the benzodiazepine receptor. Several other substances and treatments increase the affinity of 3H-diazepam for its receptors by mechanisms which may be related to the effect produced by SQ 65,396. 13 references. (Author abstract modified)

001009 Delanoy, Richard L.; Dunn, Adrian J.; Walter, Roderich. Department of Neuroscience, University of Florida College of Medicine, Gainesville, FL 32610 **Neurohypophyseal hormones and behavior: effects of intracerebroventricularly injected hormone analogs in mice.** Life Sciences (Oxford). 24(7):651-657, 1979.

The behavioral effects of four naturally occurring neurophypophyseal hormones, arginine vasopressin (AVP), lysine vasopressin (LVP), (Arg8)vasotocin (AVT), and oxytocin (OXT) were compared with those of 10 analogus with amino acid residue replacements. Foraging, scratching, and squeaking were monitored in male CD-1 mice following intracerebroventricular administration of various doses of the 14 compounds. The most potent peptides were AVP, LVP, AVT, OXT and the analogs (Hly8)vasopressin, (delta3-Pro7)AVP, (Thi3)LVP, (Abu4)AVP, and (Abu4)LVP. The (Leu4)LVP analog also showed significant activity, but was far less poten than the natural hormones. None of the remaining analogs enhanced activity with an increase in peptide dose; this group included peptides with C-terminal modifications and those in which the tyrosine (position 2) or the asparagine residue (position 5) of the hormones were substituted by alanine. The structure/function relationship relevaed by these findings is consistent with the conformation/activity model proposed for endocrine activities of neurohypophyseal peptides. 19 references. (Author abstract modified)

001010 Friedman, Howard; Carey, Robert J. Veterans Administration Hospital and SUNY, Upstate Medical Center, Syracuse, NY 13210 **Long-term effects of LSD-25 on easy and hard visual discrimination in rats.** Pharmacology Biochemistry and Behavior. 9(6):809-812, 1978.

In a study of the long-term effects of LSD-25 on easy and hard visual discrimination in rats, rats subjected either to unilateral frontal cortex lesion or sham operation were trained to discriminate between a lighted and unlit alley to escape shock. After reaching criterion, the rats were intubated with either placebo or LSD-25. One week or 1 month later they were given discrimination trials with either an increased level of task difficulty, or with the same (easy) level used in preintubation training. A single dose drug effect, as long as 1 month postintubation, was observed both in error scores and running time, but only with hard discriminations. 12 references. (Author abstract modified)

001011 Gluckman, M. I.; Stein, L. Research Division, Wyeth Laboratories, Inc., Radnor, PA 19087 **Pharmacology of lorazepam.** Journal of Clinical Psychiatry. 39(10, Section 2):3-10, 1978.

The anxiety reducing potential of lorazepam and its behavioral psychopharmacokinetics were examined in a series of tests. Results show that lorazepam: 1) reduced conflict behavior in rats and monkeys; and 2) inhibited pentylenetetrazol and electroshock convulsions, suppressed footshock induced fighting behavior, and prevented morphine induced stimulation in mice in lower doses than other 1,4-benzodiazepines tested. Results from this behavioral profile suggest that lorazepam will be an active antianxiety agent in man with good separation between the sedative hypnotic and anxiety reducing doses. 15 references. (Author abstract modified)

001012 Horn, A. S.; de Kaste, D.; Dijkstra, D.; Rollema, H.; Feenstra, M.; Westerink, B. H. C.; Grol, C.; Westerbrink, A. Department of Pharmacy, University of Groningen, 9713 AW, Groningen, The Netherlands **A new dopaminergic prodrug.** Nature (London). 276(5686):405-407, 1978.

Passage in the brain of a new dopaminergic prodrug from 2-amino-6,7-dihydroxytetrahydronapthalene (ADTN) is described. The synthesis consisted of making a diester derivative of the catechol function which reduces the polarity of the parent molecule thus making it more lipid soluble. The diester was prepared in a yield of 74% by treating ADTN in trifluoroacetic acid, with benzoylbromide at room temperature. Initial experiments indicate that the prodrug, injected intraperitoneally would enter the brain and be hydrolyzed to ADTN. Further, the prodrug (50 mg/kg) was found to effect a 70% decrease in homovanillic acid (HVA) levels at 4 hours postadministration, but by 6 hours HVA concentrations were near normal. Lower doses of the

drug were also found to produce decreases in striatal HVA levels in a dose related manner. No significant depletion of striatl dopamine were found over a 4 hour period. The effects of .50, .25, and .05mg/kg haloperidol could all be attenuated by 50 mg/kg DBADTN. Pharmacokinetic, practical, and clinical implications are briefly discussed. 31 references.

001013 Knoll, Joseph; Ecsery, Zoltan; Magyar, Kalman; Satory, Eva. Department of Pharmacology, Semmelweis University of Medicine, 1085 Budapest, Ulloiut 26, Hungary **Novel (-)deprenyl-derived selective inhibitors of B-type monoamine oxidase. The relation of structure to their action.** Biochemical Pharmacology. 27(13):1739-1747, 1978.

A structure/activity relationship study in CFY rats, CFLP mice, and cats revealed the importance of the aromatic ring and the optimum length of the chain between the aromatic ring and the nitrogen for the selective inhibition of monoamine oxidase (MAO) type B. Among the (-)deprenyl derived compounds tested, N-methyl-N-propargyl-(2-furyl-l-methyl)-ethylammonium hydrochloride was the most promising selective inhibitor of MAO type B. Implications of these results for the use of MAO inhibitors in psychotic depression and Parkinson's disease are discussed. 44 references. (Author abstract modified)

001014 Leshner, Alan I.; Hofstein, Raphael; Samuel, David; Van Wimersma Greidanus, TJ. B. Dept. of Psychology, Bucknell University, Lewisburg, PA 17837 **Intraventricular injection of antivasopressin serum blocks learned helplessness in rats.** Pharmacology Biochemistry and Behavior. 9(6):889-892, 1978.

The effects of intraventricular administration of antivasopressin serum on memory in the learned helplessness paradigm were investigated in rats. Rats treated intraventricularly with control rabbit serum immediately after an initial period of inescapable preshocks showed subsequent deficits in learning an escape task, a replication of the learned helplessness phenomenon. However, rats treated intraventricularly with antiserum to vasopressin after the initial inescapable shocks did not show later escape deficits. These findings are interpreted as supporting the suggestion that endogenous vasopressin is involved in long-term memory. 19 references. (Author abstract modified)

001015 MacDonald, Robert L.; Nelson, Phillip G. Laboratory of Developmental Neurobiology, National Institute of Child Health and Human Development, Bethesda, MD 20014 **Specific-opiate-induced depression of transmitter release from dorsal root ganglion cells in culture.** Science. 199(4336):1449-1551, 1978.

Presynaptic and postsynaptic mechanisms of drug action were assesed using dissociated mouse nerve cell cultures. The opiate etorphine was found to depress monosynaptic excitatory postsynaptic potentials (EPSP's) elicited in spinal cord cells by activation of dorsal root ganglion cells in murine neuronal cell culture. The depression is reversed by naloxone. Statistical analysis of the synaptic responses reveals that the opiate reduces EPSP quantal content at this synapse without altering quantal size. Therefore, the opiate action is presynaptic and affects transmitter release rather than postsynaptic responsiveness. 8 references. (Author abstract modified)

001016 Meldrum, B. S.; Horton, R. W. Department of Neurology, Institute of Psychiatry, de Crespigny Park, London SE5 8AF, England **Anticonvulsant activity in photosensitive baboons, Papio papio, of two new 1,5 benzodiazepines.** Psychopharmacology (Berlin). 60(3):277-280, 1979.

The anticonvulsant activity of two new 1,5-benzodiazepines was evaluated in baboons (Papio papio) with photosensitive epilepsy. BAU-426 (8-chloro-6-(2-chlorophenyl)-4H-s-triazolo-(4,3-a) (1,5-benzodiazepin-5-(6-H)on) and BAU-500 (8-chlor-6-(2-trifluormethylphenyl)-4H-s-triazol(4,3-a) (1,5)-benzodiazepin-5-(6H)-on) were administered intravenously to baboons, with or without priming with D,L-allylglycine. BAU-426 or BAU-500 (0.1-0.2mg/kg) produced partial or transient protection against photically induced myoclonus or epileptic responses. Complete protection, in the absence of signs of sedation or acute neurological toxicity, was seen 1-4 hours after 0.5-2.0mg/kg of either drug. EEG changes typical of benzodiazepines were seen for 1-3 hours and clinical signs of sedation with some hypotonia were evident for 1 hour after 5mg/kg of either drug. These results are compared with previous findings with diazepam and clonazepam. 11 references. (Author abstract modified)

001017 Murphy, Dennis L.; Donnelly, Cynthia H.; Richelson, Elliott; Fuller, Ray W. Clinical Neuropharmacology **Branch, NIMH, Bethesda, MD N-substituted cyclopropylamines as inhibitors of MAO-A and MAO-B forms.** Biochemical Pharmacology. 27(13):1767-1769, 1978.

The inhibition of type A and type B monoamine oxidase (MAO) by N-substituted cyclopropylamines was studied in mouse neuroblastoma NIE-115 cells, human platelet concentrates, and rat brain homogenates. MAO activity in mouse neuroblastoma homogenates was preferentially inhibited by N(2-(o-chlorophenoxy)-ethyl)cyclopropylamine (L-51641) and a series of structurally related compounds. Two other congeners (L-54761 and L-54748) from this series, however, deomonstrated preferential inhibition of MAO in human platelet homogenates. As neuroblastoma and human platelet cells have been identified as possessing apparently exclusive type A and type B MAO characteristics, respectively, L-54761 and L-54748 appear to be preferential MAO-B inhibitors. In keeping with this conclusion, a greater proportional inhibition of phenylethylamine oxidation than serotonin oxidation by these two compounds was found in rat brain homogenates, whereas contrasting results were obtained with L-51641. Preferential effects of L-54761 and L-51641 on phenylethylamine oxidation and, to a lesser extent, on serotonin oxidation were also observed in vivo. 16 references. (Author abstract)

001018 Nemeroff, Charles B.; Osbahr, Albert J., III.; Bissette, Garth; Jahnke, Gloria; Lipton, Morris A.; Prange, Arthur J., Jr. Biological Sciences Research Center, University of North Carolina School of Medicine, Chapel Hill, N.C. 27514 **Cholecystokinin inhibits tail pinch-induced eating in rats.** Science. 200(4343):793-794, 1978.

Peripheral administration of the COOH-terminal octapeptide of cholecystokinin in doses from 1 to 100mcg/kg of body weight (0.25 to 25.0mcg per rat) significantly antagonized tail pinch induced eating in rats, an animal model for stress induced human hyperphagia. Centrally administered cholecystokinin was effective only in high doses (3mcg into the cerebral ventricle). The finding that the minimal effective dose of cholecystokinin in suppressing stress induced appetitive behabior is smaller after peripheral than central administration suggests that the peptide is acting on peripheral, as opposed to central nervous system, substrates. 22 references. (Author abstract)

001019 Palmer, G. C.; Wagner, H. R.; Palmer, S. J.; Manian, A. A. Department of Pharmacology, College of Medicine, University of South Alabama, Mobile, AL 36688 **Histamine-, norepinephrine-, and dopamine-sensitive central adenylate cyclases: effects of chlorpromazine derivatives and butaclamol.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 233(2):314-325, 1978.

A series of recently available derivatives (quatenary and hydroxylated) of chlorpromazine (CPZ) and butaclamol were evaluated with respect to antagonism of norepinephrine sensitive

(rat cerebral cortex), dopamine sensitive (rat striatum), and histamine sensitive (rabbit cerebral cortex) adenylate cyclases. It is concluded that the metabolites of CPZ contribute to the central therapeutic and/or side-effects of the parent compound. 21 references. (Author abstract modified)

001020 Roemer, D.; Pless, J. Biological and Medical Research Division, Sandoz Ltd., CH-4002 Basel, Switzerland **Structure activity relationship of orally active enkephalin analogues as analgesics.** Life Sciences (Oxford). 24(7):621-624, 1979.

A series of methionine-enkephaline derivatives was synthesized and tested for analgesic activity in the mouse after intravenous, subcutaneous, and oral administration. The compounds were considered to have analgesic effects if they increased reaction time in a tail flick test by more than 75%. Results indicate that substitution of glycine in position 2 of the naturally occurring methionine-enkephalin by D-alanine; the methylation of tyrosine and phenylalanine in position 1 and 4, respectively; and the conversion of the methionine in position 5 to the corresponding alcohol sulfoxide results in potent, orally active enkephalin analogues with marked analgesic properties. The site of activity of these compounds is believed to be in the spinal cord. 4 references. (Author abstract modified)

001021 Uzan, Andre; Le Fur, Gerard; Mitrani, Nicole; Kabouche, Marie; Donadieu, Anne-Marie. Pharmindustrie, Groupe PHARMUKA, 35, quai du Moulin de Cage, F-92231 Gennevilliers, France **Effects on striatal and mesolimbic dopamine systems of a new potential antipsychotic drug -- mezilamine -- with weak cataleptogenic properties.** Life Sciences. 23(3):261-274, 1978.

The effects of mezilamine (2-methylamino-4-N-methylpiperazino-5-methylthio-6-chloropyrimidine) on regional dopamine (DA) metabolism in rabbit and rat brain and on some other parameters likely to corroborate the possible analogy with atypical neuroleptics were determined. Previous studies with this new compound had suggested a mechanism of action similar to that of some atypical neuroleptics. It was found that mezilamine inhibits DA sensitive adenylate cyclase in rat nucleus accumbens and striatum both in vitro and in vivo. After parenteral administration, it produces a dose dependent increase in homovanillic acid. As with clozapine, this increase is more marked in the limbic system than in the striatum of rabbit brain, whereas the reverse holds true in the rat. In rats pretreated with probenecid, however, mezilamine and clozapine produce more activity in the limbic system, while the effects of chlorpromazine are more pronounced in the striatum. In both regions, mezilamine is more active than chlorpromazine. After chronic treatment (15 days), the mezilamine activity decreases in the striatum, but not in the limbic system. The low cataleptogenic activity of mezilamine cannot be explained by anticholinergic properties, nor can it be related to GABA mimetic properties. The hypothesis attributing alpha-adrenergic properties to mezilamine is supported by the catalepsy inducing effect observed in the rat when associating mezilamine and phenoxybenzamine. 36 references. (Author abstract modified)

03 MECHANISM OF ACTION: PHYSIOLOGICAL, BIOCHEMICAL AND PHARMACOLOGICAL

001022 Ahlenius, S. Dept. of Pharmacology, University of Goteborg, Fack, S-400 33 Goteborg, Sweden **Potentiation by haloperidol of the catalepsy produced by lesions in the parafascicular nucleus of the rat.** Brain Research (Amsterdam). 150(3):648-652, 1978.

The functional importance of the convergence in the rat caudoputamen of impulses from the substantia nigra and from the parafascicular nucleus was investigated by studying the interaction between the dopamine receptor blocking agent, haloperidol, and subtotal lesions of the parafascicular nucleus, with regard to catalepsy. In addition, some preliminary observation on the afferents of the parafascicular nuclsue using the horseradish peroxidase technique are presented. Five adult male rats were given haloperidol 1.0, 2.5, or 5.0omg/kg i.p. and were tested for catalepsy. Animals given the lower dose of haloperidol preoperatively did not show any signs of catelepsy. Evidence that neurons of the zona reticulata of the substantia nigra project into the parafasicular nucleus further emphasizes the likelihood that this nucleus is involved in extrapyramidal motor mechanisms. 10 references.

001023 Akil, Huda; Watson, Stanley J.; Berger, Philip A.; Barchas, Jack D. Dept. of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, CA 94305 **Endorphins, beta-LPH, and ACTH: biochemical, pharmacological and anatomical studies.** Advances in Biochemical Psychopharmacology. 18:125-137, 1978.

Biochemical, pharmacological, and anatomical studies of the endorphins, beta-lipotropin (beta-LPH), and adrenocorticotrophic hormone (ACTH) are described. Extraction and assay techniques for the endogenous opioids and related peptides are outlined. Anatomical studies suggest a possible differential distribution of beta-LPH and enkephalin pathways, while ACTH like reactivity appears to parallel beta-LPH activity in the rat brain. Physiological and pharmacological studies support the notion of a role of enkephalins and endorphins in pain modulation and stress responsiveness in rats and humans. Naloxone partially blocked stress induced analgesia, but morphine tolerance led to a dramatic potentiation of this phenomenon. Analgesic electrical stimulation of medial gray sites produced significant time dependent changes in brain enkephalin levels in the rat and a rise in cerebrospinal fluid levels in human patients. In clinical studies of schizophrenic patients, naloxone produced a significant decrease in hallucinations and anxiety, suggesting a role for the endogenous opioids in psychiatric disorders. 41 references.

001024 Albertson, T. E.; Peterson, S. L.; Stark, L. G. Department of Pharmacology, School of Medicine, University of California, Davis, CA 95616 **Effects of phenobarbital and SC-13504 on partially kindled hippocampal seizures in rats.** Experimental Neurology. 61(2):270-280, 1978.

The effects of SC-13504 (l-diphenylmethyl-4-((6-methyl)-2-pyridyl) methyleneamino piperazine) were compared with those of phenobarbital on prekindled and partially kindled hippocampal seizures in male Sprague-Dawley rats. After ll stimulations (l/day), the seizures showed a significant increase in afterdischarge (AD) duration, clinical seizure activity, and time to return to normal EEG; the stimulus threshold showed a nonsignificant decrease. When rats were stimulated at the control day threshold, 3 and 300mg/kg SC-13504 provided anticonvulsant protection against both prekindled and kindled seizures, but 30mg/kg SC-13504 was less effective. Animals stimulated until seizures occurred on days 2 and 12 showed a dose dependent decrease in AD duration and an increase in voltage threshold with all three doses of SC-13504. Phenobarbital provided no protection against prekindled seizures but was very effective against kindled seizures. Results suggest that phenobarbital is a more effective anticonvulsant against developing or developed limbic system seizures than against prekindled seizures. 36 references. (Author abstract modified)

001025 Amir, Shimon; Stern, Muriel H. Concordia University, Center for Research on Drug Dependence, 1455 de Maisonneuve Blvd. W., Montreal, Quebec, H3G 1M8, Canada **Electrical stimulation and lesions of the medial forebrain bundle of the rat: changes in voluntary ethanol consumption and brain aldehyde**

dehydrogenase activity. Psychopharmacology (Berlin). 57(2):167-174, 1978.

The relationship between aldehyde dehydrogenase and voluntary ethanol consumption in rats is studied. Repeated sessions of electrical stimulation of the ventral aspect of the medial forebrain bundle (VMFB) region of the rat brain resulted in a significant increase in voluntary ethanol intake, while lesions of the VMFB were followed by decreases in ethanol consumption. By the end of the stimulation regimen, the levels of midbrain diencephalon aldehyde dehydrogenase (MB-DE ALDH) of stimulated animals were significantly higher than those of control animals. A marked decrease in MB-DE ALDH activity was seen in lesioned animals but not in cyanamide treated or implanted control animals. Neither stimulation nor lesioning of the VMFB had any demonstrable effect on whole brain ALDH activity. Cyanamide caused a pronounced decrease in ethanol intake and in levels of liver ALDH activity. The increase in MB-DE ALDH activity in the ethanol drinking, stimulated animals was attributed to the interaction between VMFB activation and ethanol drinking, while the reduction in ALDH activity in lesioned rats was attributed to the degeneration of nerve fibers containing biogenic amines. 43 references. (Author abstract modified)

001026 Anderson, Larry David. Purdue University **Correlation between adrenal catecholamine release and change in subcellular 45CA levels: effects of thyroxin, bishydroxycoumarin and parathyroid hormone. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 77-30052, HC$15. MF$7.50. 118 p. 1977.

Calcium movements in adrenomedullary cells during stimulation with acetylcholine and potassium were compared, and modification of acetylcholine induced changes in calcium flux by thyroxin, bishydroxycoumarin and parathyroid hormone were evaluated. Results of a study in rats indicate that natural compounds can enhance adrenomedullary catecholamine release by increasing plasma membrane calcium flux. Effects of bishydroxycoumarin on acetylcholine induced adrenal catecholamine secretion are complex, but inhibitory actions of this agent are probably offset by enhanced calcium influx. Membrane calcium flux evidently is especially susceptible to alteration by hormones and drugs. The mechanism of action may be more important than possible direct effects on subcellular calcium stores. (Journal abstract modified)

001027 Anderson, Susan D.; Roberts, P. J. Dept. of Physiology & Pharmacology, School of Biochemical & Physiological Sciences, University of Southampton, Southampton SO9 3TU, England **Amino acid-induced stimulation of (3H)-dopamine release from rat striatum in vitro.** British Journal of Pharmacology (London). 64(3):429P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of several amino acids on the release of dopamine (DA) from rat striatal slices are reported. L-glutamate (20-100mcM) produced a dose related, calcium dependent increase in the release of 3H-DA. This effect was mimicked by a number of related excitatory amino acids, including D-glutamate, L-aspartate, cysteate, kainate, and ibotenate. The conformationally restricted excitatory analogue of glutamate, cis-1-amino-1,3-dicarboxycyclopentane, was a potent releaser of 3H-DA, but the trans isomer was inactive. Leucine, arginine, beta-aminoglutarate, L-glutamine, and D-aspartate were also inactive. Two proposed glutamate antagonists, glutamate diethylester and 2-amino-4-phosphonobutyric acid, markedly diminished the DA release evoked by L-glutamate. The addition of procaine or tetrodotoxin had no effect on stimulated DA release, which suggests that glutamate receptors are localized in the dopaminergic terminals themselves. Gamma-aminobutyric acid (GABA), glycine, and proline (100mcM) each significantly stimulated 3H-DA release; the effects of GABA were reduced in the presence of 50mcM bicuculline, and the actions of glycine and proline were inhibited by 1mcM strychnine. 6 referenees. (Author abstract modified)

001028 Anlezark, Gillian M.; Horton, Roger W.; Meldrum, Brian S. Department of Neurology, Institute of Psychiatry, De Crespigny Park, Denmark Hill, London SE5 8AF, England **Dopamine agonists and audiogenic seizures: the relationship between protection against seizures and changes in monoamine metabolism.** Biochemical Pharmacology (Oxford). 27(24):2821-2828, 1978.

Apomorphine (1 and 10mg/kg), (-)-N-n-propylnorapomorphine (NPA, 0.1mg/kg), ergot alkaloids (ergocornine, 2mg/kg; bromocryptine, 10mg/kg; d-lysergic acid diethylamide, LSD, 9mg/kg; ergometrine, 4 and 10mg/kg), and quipazine (50mg/kg) protected DBA/2 mice against audiogenic seizures. LSD, ergometrine, and quipazine did not prevent the initial wild running seizure response, however. Apomorphine (10mg/kg) increased dopamine content by 72% and noradrenaline content by 91% within 15 minutes. Apomorphine, NPA, and the ergot alkaloids reduced cerebral concentrations of homovanillic acid (HVA) by 31-73%, but with a longer time course than the seizure protection. After LSD, ergometrine, and quipazine, a 35-48% fall in 5-hydroxyindoleacetic acid content was also observed. All the drugs except quipazine lowered body temperature, with the greatest decrease in temperature occurring at the time of maximal seizure protection. LSD and ergocornine exerted protective effects even when the fall in body temperature was prevented by external heating. It is concluded that the antiepileptic action of ergocornine, bromocryptine, and the apomorphine derivatives is associated with the stimulation of DAe (haloperidol antagonized) dopamine receptor subpopulation. 48 references. (Author abstract modified)

001029 Arbilla, S.; Briley, M. S.; Dubocovich, M. L.; Langer, S. Z. Synthelabo, L. E. R. S., Department of Biology, Synaptic Receptor Unit, 58 rue de la Glaciere, F-75013, Paris, France **Neuroleptic binding and their effects on the spontaneous and potassium-evoked release of 3H-dopamine from the striatum and of 3H-noradrenaline from the cerebral cortex.** Life Sciences (Oxford). 23(17/18):1775-1780, 1978.

At the symposium, ""Receptors of Dopamine Antagonists: New Biochemical Approaches," held in Beerse, Belgium, July 1978, a paper was presented on a study of the effects of neuroleptics on the release of dopamine (DA) from the striatum and of noradrenaline (NA) from the cerebral cortex. Neither DA agonists nor neuroleptics modified the potassium evoked release of (3H)DA from rat striatal slices. In contrast, the stimulation evoked release of (3H)NA from slices of rat occipital cortex was enhanced by neuroleptics through a blockade of presynaptic alpha-adrenoceptors. Studies of (3H)spiroperidol binding reveal the existence of two binding sites in both striatum and cortex. 17 references. (Author abstract modified)

001030 Argov, Zohar; Yaari, Yoel. Department of Neurology, Hadassah University Hospital, P.O.B. 499, Jerusalem, Israel **The action of chlorpromazine at an isolated cholinergic synapse.** Brain Research (Amsterdam). 164:227-236, 1979.

The effects of chlorpromazine (CPZ) on cholinergic transmission were studied at the isolated neuromuscular synapse of the frog. CPZ reduced end plate potential amplitude, mainly through inhibition of transmitter release at presynaptic nerve terminals. The drug also reduced the amplitude of focally recorded end plate current without detectable change in nerve terminal potential, decreased the amplitude of miniature end

plate potentials, and increased the frequency of spontaneous liberation of transmitter in normal or calcium free Ringer's solution. It is concluded that CPZ inhibits cholinergic transmission by a complex action on presynaptic and postsynaptic elements. The relevance of these findings to the actions of CPZ on central cholinergic pathways is discussed. 28 references. (Author abstract modified)

001031 Arnold, Judith Ellen Bragg. University of Colorado at Boulder **The amphetamine-induced release of endogenous norepinephrine and dopamine from rat brain tissue. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. Mfilms, No. 77-29895, HC$15. MF$7.50. 317 p. 1977.

A number of characteristics of amphetamine induced release of endogenous norepinephrine and dopamine were studied using a preparation of chopped rat brain tissue incubated in physiological salt solution containing varying concentrations of amphetamine. Release was measured in the hypothalamus, corpus striatum, and cerebral cortex. The time course of amphetamine induced release of both amines from cerebral cortex was markedly temperature dependent and similar for both amines at 37 degrees C. It is suggested that observations on the disposition of exogenously administered radiolabeled catecholamines may not necessarily reflect the disposition of endogenous amines. The release of amines induced by potassium was used as a model for the release of amines induced by membrane depolarization. It was found that the potassium induced release of both norepinephrine and dopamine was calcium dependent, suggesting an exocytotic mechanism for stimulus induced release of amines. Amphetamine induced release of these amines was only slightly altered by omission of calcium from the external medium. It is inferred that amphetamine induced release of these substances occurs, at least in part, by a mechanism other than exocytosis. (Journal abstract modified)

001032 Aronstam, R. S.; Schuessler, D. C., Jr.; Eldefrawi, M. E. Department of Pharmacology and Experimental Therapeutics, University of Maryland School of Medicine, Baltimore, MD 21202 **Solubilization of muscarinic acetylcholine receptors of bovine brain.** Life Sciences (Oxford). 23(13):1377-1382, 1978.

The effectiveness of several detergents and salts in solubilizing the muscarinic acetylcholine receptor (identified by its atropine sensitive (3H)3-quinuclidinyl benzilate (QNB) binding) from bovine striatal membranes is compared. The highest density of receptor is obtained by extraction with 1% digitonin-0.1mM ethylenediaminotetraacetate. Although the total solubilized muscarinic receptors (sites/ml) are increased and the nonspecific binding is decreased when 1M NaCl is included in this extraction medium, the receptor density (sites/mg protein) is lower. It is concluded that the solubilized receptors have the same specific QNB binding affinity, and sensitivity to a variety of drugs, as the membrane bound muscarinic receptors. 13 references. (Author abstract)

001033 Aronstam, Robert S.; Kellogg, Carol; Abood, Leo G. Department of Pharmacology and Experimental Therapeutics, University of Maryland School of Medicine, Baltimore, MD 21201 **Development of muscarinic cholinergic receptors in inbred strains of mice: identification of receptor heterogeneity and relation to audiogenic seizure susceptibility.** Brain Research (Amsterdam). 162(2):231-241, 1979.

The concentrations and biochemical properties of muscarinic acetylcholine receptors in the brains of two highly inbred strains of mice, DBA/2J and C57BL/6J, were studied, using tritiated quinuclidinyl benzilate (QNB), a potent and specific receptor antagonist. Results indicate that murine muscarinic receptors exist in at least two forms, differing in their affinities for receptor agonists but sharing the same high affinity for receptor antagonists. Binding properties of receptors in brainstem and hypothalamus indicate that more than 60% of the muscarinic receptors in these regions are in the high affinity state, while on 30-40% of receptors in cortex, striatum, and thalamus appear to be in the high affinity form. The hippocampus has the least proportion of high affinity receptors. Saturation curves and Scatchard plots of QNB binding at 2, 14, 21, and 42 days postnatal age indicate no differences or changes in the affinity or nature of binding with age in either strain. Significant increases in QNB binding density were observed between 14-42 days in the cortex, hippocampus, striatum, thalamus, and hypothalamus, but not in the midbrain/pons/medulla region. Differences in receptor density and agonist state distribution between the two strains are discussed in relation to audiogenic seizure sensitivity. 26 references. (Author abstract modified)

001034 Arregui, Alberto; Emson, Piers C.; Spokes, Ernest G. MRC Neurochemical Pharmacology Unit, Medical School, Hills Road, Cambridge CB2 2QD, England **Angiotensin-converting enzyme in substantia nigra: reduction of activity in Huntington's disease and after intrastriatal kainic acid in rats.** European Journal of Pharmacology (Amsterdam). 52(1):121-124, 1978.

Angiotensin converting enzyme activity was studied in the brains of patients who died with Huntington's disease and in male Sprague-Dawley rats given intrastriatal injections of kainic acid, an agent that selectively destroys neuronal cell bodies. The substantia nigra of Huntington's disease brains showed a 78% reduction in angiotensin converting enzyme activity in the pars reticulata and a 48% reduction in the pars compacta; the nucleus accumbens showed a 28% reduction in enzyme activity. In rats, intrastriatal injections of kainic acid produced a 55% reduction in enzyme activity in the ipsilateral substantia nigra. The human and animal data suggest that a major part of the angiotensin converting enzyme activity in the substantia nigra is localized in nerve terminals whose cell bodies originate in the striatum. 12 references. (Author abstract modified)

001035 Avakumov, Vladimir; Muller, Dieter; Glockner, Reinhild; Klinger, Wolfgang. Allunion Scientific Institute of Vitamine Research, Moscow, USSR **The influence of chloracizin (Ch) and ftoracizine (Ft) on hexobarbital sleeping time, ethylmorphine N-demethylation and cytochrome P450 and b5 concentration in rat liver.** Biochemical Pharmacology (Oxford). 27(17):2177-2179, 1978.

To determine whether two new phenothiazines act as acute inhibitors or chronic inducers of liver microsomal monooxygenases, the effects of chloracizin (CH) and ftoracizine (FT) on hexobarbital sleeping time, on ethylmorphine N-demethylation, and on cytochrome P450 concentration were investigated in male Wistar rat livers. Both drugs increased hexobarbital sleeping time and hexobarbital concentration in serum at waking; this inhibitory action of CH and FT on drug metabolism was confirmed in vitro. Cytochrome P450 concentration and the rate of ethylmorphine N-demethylation were also increased. Results indicate that CH and FT act as inducers and that their induction effect is as potent as that of chlorpromazine. 18 references.

001036 Bacopoulos, Nicholas G.; Heninger, George R.; Roth, Robert H. Department of Pharmacology, Yale University School of Medicine, New Haven, CT 06510 **Effects of haloperidol and probenecid on plasma and CSF dopamine metabolites in the rhesus monkey (Macacca mulatta).** Life Sciences (Oxford). 23(17/18):1805-1812, 1978.

The metabolites of dopamine, 3,4-dihydroxyphenylacetic acid (DOPAC) and homovanillic acid (HVA), were measured in the plasma and cerebrospinal fluid (CSF) of rhesus monkeys by

mass fragmentography. Intraperitoneal administration of probenecid (25mg/kg) caused an accumulation of HVA in plasma and CSF. These effects were significantly enhanced by 1.0mg/kg haloperidol. Plasma and CSF concentrations of HVA were positively correlated. These findings indicate that plasma HVA may be a useful index of central dopamine metabolism. 26 references. (Author abstract modified)

001037 Baraldi, M.; Grandison, L.; Guidotti, A. Laboratroy of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Distribution and metabolism of muscimol in the brain and other tissues of the rat.** Neuropharmacology (Oxford). 18(1):57-62, 1979.

Muscimol distribution in male Sprague-Dawley rat brain was examined using a simplion exchange chromatographic method and tritiated methylene muscimol of high specific activity. After intravenous injection, muscimol entered the brain and distributed unevenly to various brain regions; the highest muscimol concentrations were in the substantia nigra, colliculi, and hypothalamus. The muscimol recovered in brain after iv injection of 8mcmol/kg was only 0.02% of the amount injected; its concentration in brain was about 200pmol/g tissue. Muscimol disappeared rapidly from blood, and plasma levels of radioactive muscimol metabolites showed corresponding increases. Pretreatment with aminooxyacetic acid, a blocker of transamination activity, resulted in increased tissue concentrations of muscimol and decreased levels of muscimol metabolites in brain and blood. Pretreatment with pargyline or 2-diethylaminoethy1-2,2-diphenylvalerate hydrochloride had no effect on brain levels of muscimol. Results suggest that transamination is a major pathway in the metabolism of muscimol. 15 references. (Author abstract modified)

001038 Bareggi, S. R.; Markey, K.; Paoletti, R. Institute of Pharmacology and Pharmacognosy, University of Milan, Milan, Italy **Mechanism of action of piribedil on noradrenergic neurons in rat brain.** Biochemical Pharmacology (Oxford). 27(24):2803-2805, 1978.

Piribedil (30mg/kg, i.p.)induced a marked increase of 3-methoxy-4-hydroxyphenylglycol sulfate (MOPEG-SO4) without affecting noradrenaline (NA) levels in male rats. At higher doses (60mg/kg), an increase in MOPEG-SO4 and a decrease in NA levels were observed. The piribedil effect on MOPEG-SO4 was primarily confined to the cortex/hippocampus. Pretreatment with reserpine (1.25mg/kg, i.p.)reduced but did not abolish the effect of piribedil on MOPEG-SO4. The possibility that piribedil has an amphetamine like mechanism of action is discussed. 16 references. (Author abstract modified)

001039 Barker, J. L.; Neale, J. H.; Smith, T. G., Jr.; MacDonald, R. L. Laboratory of Neurophysiology, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, MD 20014 **Opiate peptide modulation of amino acid responses suggests novel form of neuronal communication.** Science. 199(4336):1451-1453, 1978.

Mouse spinal neurons grown in tissue culture were used to study the electrophysiological pharmacology of the opiate peptide leucine-enkephalin. Enkephalin depressed glutamate evoked responses in a noncompetitive manner independent of any other effects on membrane properties. The results demonstrate a neuromodulatory action of opiate peptide functionally distinct from the conventional neurotransmitter class of operation. 11 references. (Author abstract)

001040 Bartus, Raymond T. CNS Biology, Medical Research Division, American Cyanamid Company, Pearl River, NY 10965 **Evidence for a direct cholinergic involvement in the scopolamine-induced amnesia in monkeys: effects of concurrent administration of physostigmine and methylphenidate with scopolamine.** Pharmacology Biochemistry and Behavior. 9(6):822-836, 1978.

Three male, test sophisticated rhesus monkeys were run under various drug conditions to evaluate the amnesia induced by low doses of the anticholinergic scopolamine. The anticholinesterase physostigmine partially, but reliably reversed the amensia in all three monkeys, while the catecholaminergic stimulant, methylphenidate potentiated the behavioral deficits produced by scopolamine. These results provide further support for the idea that the amnesia produced by scopolamine is due to a direct dysfunction in central cholinergic mechanisms, and is not due to some general effect involving arousal, attention, etc. 21 references. (Author abstract modified)

001041 Baux, G.; Simonneau, M.; Tauc, L. Laboratoire de Neurobiologie cellulaire, C.N.R.S., F-91190, Gif-sur-Yvette, France **Blocking action of Ruthenium Red on cholinergic and non-cholinergic synapses: possible involvement of sialic acid-containing substrates in neurotransmission.** Brain Research (Amsterdam). 152(3):633-638, 1978.

The blocking action of Ruthenium Red on cholinergic and noncholinergic synapses was studied in dissected buccal and cerebral ganglia of Aplysis californica. When intracellularly injected into presynaptic neurons, or introduced in high concentration in the perfusion fluid, Ruthenium Red blocked transmission both in the cholinergic and noncholinergic synapses. This effect is interpreted as resulting from the action of Ruthenium Red on sialic acid which may be situated on the inner surface of the presynaptic terminal, and which presumably are involved in transmitter release. 17 references.

001042 Baxter, M. G.; Miller, A. A., Wheatley, P. L. Pharmacology Laboratory, Wellcome Research Laboratories, Langley Court, Beckenham, Kent BR3 3BS, England **Dexamphetamine-induced EEG arousal in rats: a possible new test model for potential anti-schizophrenic agents.** British Journal of Pharmacology (London). 64(3):410P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the use of dexamphetamine-induced EEG arousal as a model for screening potential antischizophrenic agents is discussed. In EEG studies in conscious male Wistar rats, test drugs were injected subcutaneously 1 hour before dexamphetamine; parietal EEG was recorded continuously for up to 2 hours after dexamphetamine administration. In control rats, dexamphetamine produced no overt behavioral stimulation, but significantly reduced EEG total voltage for the first hour. This response was blocked by pretreatment with d-butaclamol, alpha-flupenthixol, clozapine, or thiordazine. Two isomers that are inactive in pharmacological tests for neuroleptics, 1-butaclamol and beta-flupenthixol, failed to antagonize dexamphetamine induced EEG arousal. Diazepam was also ineffective. 6 references. (Author abstract modified)

001043 Beaudet, Alain; Descarries, Laurent. Department de biologie, Centre d'etudes nucleaires de Saclay B. P. 2, Gif-sur-Yvette 91190, France **Radioautographic characterization of a serotonin-accumulating nerve cell group in adult rat hypothalamus.** Brain Research (Amsterdam). 160(2):231-243, 1979.

Intensely labeled nerve cell bodies were identified by radioautography within the pars ventralis of nucleus dorsomedialis hypothalami (HDV), following intraventricular perfusion with 0.00001 or 0.0001M tritiated serotonin (3H-5-HT) in adult male Sprague-Dawley rats pretreated with a monoamine oxidase inhibitor. This selective reaction, which involved about 1000 neurons on each side of the third ventricle, was unaltered by concomitant administration of 0.001M nonradioactive norepineph-

rine and was absent after intraventricular injection of 0.00001 or 0.0001M tritiated norepinephrine. The 3H-labeled 5-HT nerve cell bodies were loosely grouped within the inner and caudal half of the HDV and appeared morphologically similar to the unreactive neurons among which they were interspersed. Within the same region, numerous labeled axonal varicosities were also detected, which were never found in synaptic contact with the reactive cells. If the 3H-labeled 5-HT neurons contain endogenous 5-HT, they may constitute an intrinsic source of 5-HT innervation in the adult rat hypothalamus. 63 references. (Author abstract)

001044 Benedict, C. R.; Fillenz, M.; Stanford, Clare. Johns Hopkins Hospital, Baltimore, MD 21205 **Changes in plasma noradrenaline concentration as a measure of release rate.** British Journal of Pharmacology (London). 64(2):305-309, 1978.

A method is described for repeated sampling of plasma noradrenaline (NA) in freely moving rats. This method indicated that NA concentration does not change in Sprague-Dawley rats during the day or after adrenalectomy. Exogenous NA had a half life of 1.5minutes, which was lengthened to 6.3minutes by drugs that block neuronal or extraneuronal uptake. Swim stress produced a steep rise followed by a rapid decline in plasma NA concentration. Results indicate that this method of plasma NA sampling provides a measure of both steady and rapid changes in release over long periods of time. 17 references. (Author abstract modified)

001045 Bennett, G. W.; Edwardson, J. A.; Marcano de Cotte, D.; Berelowitz, M.; Pimstone, B. L. Kronheim, S. Department of Physiology, St. George's Hospital Medical School, Tooting, London SW17 ORE, England **Release of somatostatin from rat brain synaptosomes.** Journal of Neurochemistry (Oxford). 32(3):1127-1130, 1979.

In response to depolarizing levels of potassium and veratrine alkaloids, synaptosomes prepared from female Wistar-Firth rat cerebral cortex and hypothalamus released immunoreactive somatostatin into a physiological medium. Both excitatory and inhibitory responses were obtained with monoamine neurotransmitters (norepinephrine, dopamine, and serotonin), and these responses showed regional differences. Results are consistent with a presumed neuroregulatory role of somatostatin at a synaptic level and suggest possible functional connections between somatostatin containing neurons and monoaminergic pathways in the brain. 20 references.

001046 Bhargava, V. K.; Salamy, A.; McKean, C. M. Dept. of Pharmacology, H.P. Medical College, Simla, India **Effects of cholinergic drugs on auditory evoked responses (CER) of rat cortex.** Neuropharmacology (Oxford). 17(12):1009-1013, 1978.

The effects of cholinergic drugs on evoked potentials from the auditory cortex were studied in anesthetized Sprague-Dawley rats. Oxotremorine, eserine, and carbachol increased the amplitudes of the late components (N, P2, and NJ) of the evoked responses, but did not affect the early component (P) of the response. Scopolamine blocked the effects of the cholinergic drugs. Nicotine had no effect on evoked responses. Results suggest that cholinergic mechanisms are involved in the generation of the late components of the auditory evoked response. 25 references. (Author abstract modified)

001047 Bischoff, Serge; Scatton, Bernard; Korf, Jakob. Neurochemistry Unit, Department of Biology, LERS, 31, Avenue Paul Vaillant Couturier, F-92220 Bagneux, France **Biochemical evidence for a transmitter role of dopamine in the rat hippocampus.** Brain Research (Amsterdam). 165(1):161-165, 1979.

The effects of various drugs and of lesions of noradrenergic neurons on dopamine (DA) metabolism in the rat hippocampus were investigated. Lesions of noradrenergic neurons induced surgically or with 6-hydroxydopamine had no affect on the levels of 3,4-dihydroxyphenylacetic acid (DOPAC), indicating that the level of this DA metabolite is not dependent on the integrity of noradrenergic neurons. Administration of alpha-methyl-p-tyrosine methylester decreased levels of DOPAC and DA, indicating that both compounds are synthesized by tyrosine hydroxylase in the hippocampus and excluding the possibility of DOPAC formation via transamination. The effects of pargyline, apomorphine, and haloperidol on DA and DOPAC in the hippocampus were qualitatively similar to those observed in other limbic areas innervated by DA neurons. Results suggest that only 40% of the hippocampal DA is confined to noradrenergic neurons and indicate that DA may function as a transmitter, rather than simply as a precursor to neuronal noradrenaline, in the hippocampus. 25 references.

001048 Bissette, Garth; Manberg, Paul; Nemeroff, Charles B.; Prange, Arthur J., Jr. Biological Sciences Research Center, University of North Carolina School of Medicine, Chapel Hill, NC 27514 **Neurotensin, a biologically active peptide.** Life Sciences (Oxford). 23(22):2173-2182, 1978.

Recent research on the physiological role of neurotensin (NT) is reviewed. The tridecapatide appears to be localized in various parts of the brain and gut. A high affinity binding component of neurotensin to brain membranes, synaptosomes, and mast cells has been reported. Peripheral administration of the peptide has been associated with a variety effects that appear to be primarily directed toward glucose metabolism. Vascular and inflammatory effects have also been observed. In addition, NT has complex effect on the secretion of anterior pituitary trophic hormones. Central but not peripheral administration of NT caused potent hypothermia in rats, which is not antagonized by pretreatment with pharmacological agonists of central cholinergic, dopaminergic, noradrenergic, or serotonergic systems. These data suggest that NT, and possible other endogenous peptides in the CNS, need not exert their effects through recognized neurotransmitter systems. 37 references. (Author abstract modified)

001049 Blackburn, K. J.; Bremner, R. M.; Greengrass, P. M.; Morville, M. Department of Medicinal Biology, Pfizer Central Research, Pfizer Limited, Sandwich, Kent, England **Selective affinities of bromocriptine and lergotrile for rat limbic dopamine binding sites.** British Journal of Pharmacology (London). 64(3): 413P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of bromocriptine and lergotrile on the binding of (3H)dopamine and (3H)haloperidol to rat limbic and striatal membranes are reported. Specific (3H)dopamine binding to limbic membranes was displaced by low concentrations of lergotrile (mean inhibitory concentration of IC50, 47nM), dopamine (IC50, 40nM), and bromocriptine (IC50, 47nM); haloperidol had lower affinity for these binding sites (IC50, 6mcM). The affinities of bromocriptine and lergotrile for striatal binding sites were much lower than those for limbic sites (IC50, 400nM for lergotrile and 3.3mcM for bromocriptine). Among a series of dopaminergic compounds, only (3,4-dihydroxy-phenylamino)-2-imidazoline (DPI) had greater affinity for limbic than striatal binding sites. No differences were apparent between striatal and limbic IC50 values for haloperidol, lergotrile, bromocriptine, dopamine, and DPI when (3H)haloperidol was used as the ligand. The selectivity of bromocriptine, lergotrile, and DPI for limbic rather than striatal binding sites provides additional evidence for different types of dopamine receptors. 4 references. (Author abstract modified)

001050 Blasig, Julia; Hollt, Volker; Bauerle, Ursula; Herz, Albert. Department of Neuropharmacology, Max-Planck-Institut fur Psychiatrie, Kraepelinstrasse 2, D-8000 Munich 40, Germany **Involvement of endorphins in emotional hyperthermia of rats.** Life Sciences (Oxford). 23(22):2525-2531, 1978.

In male Sprague-Dawley rats placed in a novel environment and subjected to a stressful handling procedure, body temperature increased rapidly and beta-endorphin like immunoreactivity in the plasma increased dramatically. The stress induced hyperthermia was antagonized or reversed by the active (but not by the inactive) enantiomer of naloxone. These results suggest that the endorphins are involved in stress induced or emotional hyperthermia in rats. 32 references. (Author abstract modified)

001051 Blazek, R.; Shaw, D. M. Biochemical Psychiatry Laboratory, Welsh National School of Medicine, Whitchurch Hospital, Cardiff CF4 7XB, Wales **Tryptophan availability and brain protein synthesis.** Neuropharmacology (Oxford). 17(12):1065-1068, 1978.

In a paper presented at the July 1978 meeting of the British Association for Psychopharmacology, held at the University of Wales Institute of Science and Technology in Cardiff, a study of tryptophan availability and brain protein synthesis in male rats is described. A single injection of alpha-methyl tryptophan (alphaMTP, 50mg/kg) decreased the tryptophan concentration in rat brain and plasma at 6 hours, 24 hours, and 1 week after injection. The alphaMTP treatment also reduced brain protein synthesis at 6 and 24 hours after injection, but brain protein synthesis returned to control values within 1 week. These results suggest that the rate of brain protein synthesis is sensitive to tryptophan depletion. It is suggested that the time dependent decrease in brain protein synthesis caused by tryptophan depletion may be of significance in affective disorders, if a short period of protein depletion is sufficient to disrupt serotonergic function. 9 references.

001052 Boismare, F.; Le Poncin, M.; Lefrancois, J.; Lecordier, J. C. Department of Pharmacology, UER of Medicine and Pharmacy, Hotal-Dieu, rue de Lecat, F-76036 Rouen, France **Action of cytidine diphosphocholine on functional and hemodynamic effects of cerebral ischemia in cats.** Pharmacology(Basel). 17(1):15-20, 1978.

The depression of evoked cortical potentials caused by brief periods of cerebral ischemia in cats was attenuated by prior intracarotid injection of 2, 4, or 8mg/kg cytidoline (cytidine diphosphocholine). Experiments in hypercapnic cats indicate that the protection afforded by cytidoline is of metabolic rather than hemodynamic origin. It is suggested that dopaminergic mechanisms are involved in the antiischemic effects of cytidoline. 9 references. (Author abstract modified)

001053 Bourgoin, S.; Adrien, J.; Laguzzi, R. F.; Dolphin, A.; Bockaert, J.; Hery, F.; Hamon, M. Groupe NB, INSERM U.114, Laboratoire de Neurophysiologie, F-75231 Paris Cedex 5, France **Effects of intraventricular injection of 6-hydroxydopamine in the developing kitten. II. On the central monoaminergic innervation.** Brain Research (Amsterdam). 160(3):461-478, 1979.

Although the neurotoxin 6-hydroxydopamine (6-OHDA) has selective effects against catecholaminergic neurons in rats, intraventricular administration of 6-OHDA to kittens between 5 days and 4 months of age induced marked reductions in endogenous levels of 5-hydroxytryptamine (5-HT), as well as norepinephrine (NE) and dopamine (DA). The 6-OHDA treatment profoundly decreased 5-HT levels in hippocampus and the colliculi; produced a less pronounced but significant decrease in 5-HT in the piriform cortex, cerebral neocortex, cerebellum, and septum; and had only slight effects on 5-HT in the caudate nucleus, olfactory tubercle, and raphe area. Pretreatment with chlorimipramine (10mg/kg ip) completely prevented the effects of 6-OHDA on serotonergic neurons. Marked regional differences in the effects of 6-OHDA on dopaminergic neurons were observed; DA levels in the caudate nucleus and olfactory nucleus were reduced by about 50%, but DA levels in the raphe area and hypothalamus were only slightly affected. Within 3 days of the 6-OHDA injection, NE levels in most forebrain areas and in the cerebellum were reduced to about 10% of control values, but NE levels in the lateral brainstem showed only a transient decrease. The degeneration of noradrenergic terminals in the cerebral cortex and the proliferation of noradrenergic terminals in the lateral brainstem after 6-OHDA were associated with an increase in the density of beta-adrenergic receptors. 36 references. (Author abstract modified)

001054 Bowman, Lesley A.; Dilley, Susan R; Keverne, E. B. Dept. of Anatomy, University of Cambridge, Cambridge, England **Suppression of oestrogen-induced LH surges by social subordination in talapoin monkeys.** Nature (London). 275(5675):56-58, 1978.

Evidence is presented that subordination can prevent the luteinizing hormone (LH) surge which is normally induced by giving estrogen to female monkeys, thus offering an explanation for reduced fertility and suggesting that this can be induced by behavioral interactions. Dominant and subordinate female talapoin monkeys were given extra estradiol implants over a 5 day period, and the plasma LH and prolactin levels were measured. The subordinate female had significantly higher prolactin levels, and unlike the dominant female, did not respond with an LH surge. The effects of suppressing or elevating prolactin on the estrogen induced LH surge were determined: the subordinate female received bromocyptine treatments by daily injection which lowered plasma prolactin and permitted an LH surge; but the LH surge was blocked when plasma prolactin was elevated by haloperidol treatment in the dominant female. The results show that behavioral interactions can so alter the female primate's neuroendocrine system as to render it unlikely that she could conceive. Thus, reduced fertility observed in certain subordinate female primates in the wild, and that observed in humans during stressful situations, could be related to hormonal changes. 19 references.

001055 Burke, M. Danny; Orrenius, Sten; Gustafsson, Jan-Ake. Department of Pharmacology, University of Aberdeen, Aberdeen, AB9 1FX, Scotland **Pituitary involvement in the sexual differentiation and 3-methylcholanthrene induction of rat liver microsomal monooxygenases.** Biochemical Pharmacology (Oxford). 27(8):1125-1128, 1978.

Liver microsomal monooxygenase activities with several drugs and model substrates were determined in male Sprague-Dawley rats either given a pituitary implant or hypophysectomized and injected with 3-methylcholanthrene. Implantation of a male or famele rat pituitany into immature rats caused on change to a more typically female pattern of monooxygenase activities; ethylmorphine and aminopyrine N-demethylases and ethoxycoumarin O-deethylase, which are less active in adult female than male rats, were suppressed and ethoxyresorufin O-deethylase, which is more active in females, was induced. The effects of pituitary implantation on the biphenyl and benzo(a)pyrene hydroxylases were apparently unrelated to sex differences in the activities of these enzymes. 34 references. (Author abstract)

001056 Burki, H. R. Research Institute Wander, Wander Ltd., Berne, Switzerland **Lack of effect of bromocriptine on the activity of monoamine oxidase in rat brain.** Journal of Pharmacy and Pharmacology (London). 30(4):261-262, 1978.

The effect of the ergot derivative bromocriptine on the activity of monoamine oxidase (MAO) in rat brain was investigated. Possible direct effects were determined by measuring MAO activity in whole brain homogenate and the concentration of the noradrenaline metabolite 3-methoxy-4-hydroxyphenylglycol sulphate in the brainstem after subcutaneous administration of the drug. To assess possible indirect effect, the activity of brain MAO was measured after administration of the agent for 1 week. The MAO inhibitor phenelzine was used as a reference compound. Evidence indicates that bromocriptine does not affect the activity of MAO either by a direct action or indirectly via metabolic changes. 3 references.

001057 Burks, Thomas F.; Rosenfeld, Gary C. Dept. of Pharmacology, University of Arizona College of Medicine, Arizona Health Sciences Center, Tucson, AZ 85724 **Neurotransmitter mediation of morphine hypothermia in rats.** Life Sciences (Oxford). 24(12):1067-1073, 1979.

Subcutaneous (sc) injections of morphine (10mg/kg) caused transient falls in body temperature in male Sprague-Dawley rats. The hypothermic responses to morphine were inhibited by the prior intracerebroventricular (icv) administration of methysergide or phentolamine. Methysergide treatment also prevented hypothermic responses to icv 5-hydroxytryptamine (5-HT), but not responses to icv norepinephrine or dopamine. Phentolamine inhibited responses to icv norepinephrine, but not to 5-HT. Haloperidol inhibited responses to icv dopamine, but did not alter the hypothermia induced by sc or icv morphine. Results indicate that 5-HT and norepinephrine both participate as central mediators of morphine-induced hypothermia. 27 references. (Author abstract)

001058 Butcher, Sherrel H. Department of Pharmacology, University of California, Los Angeles, CA 90024 **Effects of dopaminergic and serotonergic agonists and antagonists on acetylcholine levels and synthesis in the neostriatum. (Unpublished paper).** Research Report, NIMH Grant MH-17691, 1978. 11 p.

To assess the dynamics of monoaminergic-cholinergic interactions in the neostriatum, the effects of dopamine (DA) and serotonin (5-HTP) agonists and antagonists on neostriatal acetylcholine (ACh) levels and synthesis were investigated in Sprague-Dawley rats. One half minute and 1 minute after 2H9-choline injection the levels of endogenous ACh increased after levodopa (L-DOPA) but decreased after 5-HTP. By the second minute neostriatal ACh levels had returned to control levels. Treatment with L-DOPA produced a decrease in the concentration of 2H9-ACh, but the concentration of 2H9-Ach increased after 5-HTP. There was no significant effect on endogenous choline (Ch) levels after administration of either L-DOPA or 5-HTP; however, labeled Ch levels were reduced significantly in both treatment groups. Pimozide produced a decrease in endogenous ACh levels and a decrease in labeled ACh synthesis. p-Chloroamphetamine also produced a decrease in 2H9-ACh formed; levels of endogenous ACh, however, were significantly increased over control values. Although there was no change in endogenous Ch levels after p-Chloroamphetamine, there was a decrease in neostriatal 2H9-ACh after both drug treatments. 16 references.

001059 Cacciatore, L.; Budillon, G.; DeMarco, F.; Antoniello, S.; Cerini, R.; Mazzacca, G.; De Ritis, F. Department of Infectious Diseases, II School of Medicine, University of Naples, Policlinico, Cappella dei Cangiani, Naples, Italy **Pattern and concentration of free amino acids in the plasma and liver tissue of phenobarbital-treated rats.** Research Communications in Chemical Pathology and Pharmacology. 19(3):537-540, 1978.

The pattern and concentration of free amino acids in the plasma and liver tissue of phenobarbital treated rats was investigated. In phenobarbital treated rats, there was a significant plasma increase in the total concentraion of free amino acids. No significant change in liver free amino acid concentration was observed because of the contemporaneous and general increase in liver size which does not allow observation of any percentual variation in amino concentration. 15 references. (Author abstract)

001060 Campbell, I. C.; Colburn, R.; Walker, M. N.; Lovenberg, W.; Murphy, D. L. Clinical Neuropharmacology Branch, NIMH, Bethesda, MD 20014 **Norepinephrine and serotonin metabolism in the rat brain: effects of chronic phenelzine administration.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 629-640).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the effects of chronic phenelzine administration on norepinephrine (NE) and 5-hydroxytryptamine (5-HT) metabolism in the Zivic-Miller rat brain were reported. Phenelzine was given as 15mg/kg/48 hours for 7, 14, or 21 days, and the uptake of tryptophan, tyrosine, 5-HT, and NE into cortical synaptosomes was examined at weekly intervals. A single dose of phenelzine significantly increased the uptake of tryptophan, but had no other significant effects on NE and 5-HT metabolism. Drug treatment for 7 and 14 days produced significant increase only in tyrosine uptake. After 21 days, a significant decrease in NE uptake was observed. During the phenelzine regime, monoamine oxidase activity in brain (using tyramine as a substrate) decreased linearly from 50 to 5% of controls (from 1 to 21 days). Endogenous levels of NE and 5-HT showed an increase after one injection of phenelzine, but amine values returned to control levels over the 21 day course of treatment, showing an adaptive response. Tyrosine hydroxylase was unchanged by the phenelzine treatment, but tryptophan hydroxylase was significantly increased in the drug treated groups. 41 references. (Author abstract modified)

001061 Campbell, I. C.; Robinson, D. S.; Lovenberg, W.; Murphy, D. L. National Institute of Mental Health, NIH Clinical Center, Bldg. 10, 9000 Rockville Pike, Bethesda, MD 20014 **The effects of chronic regimens of clorgyline and pargyline on monoamine metabolism in the rat brain.** Journal of Neurochemistry (Oxford). 32(1):49-55, 1979.

The effects of chronic administration of clorgyline and pargyline on rat brain monoamine metabolism were examined. The inhibitory selectivity of these drugs towards serotonin deamination (MAO type-A and phenylethylamine deamination (MAO type-B) were maintained over a 21 day period by proper selection of low doses of these drugs. The results were consistent with MAO type-A catalyzing the deamination of serotonin and norepinephrine and with MAO type-B having little effect on these monoamines. Dopamine appeared to be deaminated in vitro principally by MAO type-A. Clorgyline administration was accompanied by persistent elevations in brain norepinephrine concentrations. Serotonin levels were also increased but returned towards control levels. Low doses of paragyline did not increase brain monoamine concentrations but treatment with higher doses led to elevations in brain norepinephrine and 5-hydroxytryptamine. The changes in monoamine metabolism seen at the end of the chronic clorgyline regimen were not due to alterations in tryptophan hydroxylase activity, which remained unaffected. 57 references. (Author abstract modified)

001062 Carter, C. J.; Pycock, C. J. Department of Pharmacology, Medical School, University of Bristol, Bristol BS8 1TD, England **Lesions of the frontal cortex of the rat: changes in neur-**

otransmitter systems in sub-cortical regions. British Journal of Pharmacology (London). 64(3):430P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of lesions aimed at the frontal cortical dopamine (DA) system on monoamine concentrations in extrapyramidal and limbic areas are reported. Bilateral electrolytic (2mA for 10 seconds), 6-hydroxydopamine (6-OHDA, 8mcg/2mcl), 6-OHDA plus desipramine (DMI, 20mg/kg), or sham lesions were placed stereotaxically in frontal cortex of male Porton rats. All types of lesions caused a significant fall in cortical noradrenaline, but this fall was reduced by DMI pretreatment. The electrolytic and 6-OHDA/DMI lesions decreased frontal cortical DA concentrations, but the 6-OHDA alone lesion paradoxically increased DA levels. The 6-OHDA and 6-OHDA/DMI lesions elevated striatal DA concentrations, and the 6-OHDA/DMI combination also increased accumbens DA levels. The 6-OHDA/DMI lesion enhanced extrapyramidal and limbic DA turnover, decreased 5-hydroxytryptamine and its metabolite concentrations in some subcortical areas, and resulted in a significant loss of gamma-aminobutyric acid from substantia nigra and globus pallidus. Results suggest that catecholamine activity within the frontal cortex can modify neurotransmitter turnover in subcortical structures. 5 references. (Author abstract modified)

001063 Carter, R. J.; Shuster, Sam. University Department of Dermatology, University of Newcastle upon Tyne, Newcastle upon Tyne, NE1 7RU, England **Melanocyte-stimulating hormone--mimetic action of the phenothiazines.** Journal of Pharmacy and Pharmacology (London). 30(4):233-235, 1978.

The melanophore stimulating action of four phenothiazines, trifluoperazine, perphenazine, chlorpromazine, and prochlorperazine is compared with alpha melanocyte stimulating hormone (MSH) on the skin of the lizard Anolis carolinensis, using a new rate method of bioassay. The dose response curves for the phenothiazines were parallel to that of alpha MSH and, when given together, alpha MSH and chlorpromazine were additive. The phenothiazines may therefore stimulate melanosome dispersion in the lizard skin by the same mechanism as alpha MSH; a MSH mimetic action of phenothiazines may similarly explain their pigmentary action in man. The pigmentary potency of the phenothiazines corresponded with their therapeutic potency in man; this is in keeping with a neuroregulatory role for MSH and suggests a possible therapeutic use for them. 17 references. (Author abstract)

001064 Chang, Raymond S. L.; Tran, Vinh Tan; Snyder, Solomon H. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Histamine H1-receptors in brain labeled with 3H-mepyramine.** European Journal of Pharmacology (Amsterdam). 48(4):463-464, 1978.

Histamine H1-receptors in rat brain were labeled with. (3H)mepyramine. The regional distribution of specific mepyramine binding resembled that of endogenous histamine, with highest levels in the hypothalamus and brainstem; intermediate levels in the thalamus, midbrain, and cerebral cortex; and lowest level in the cerebellum. The identification of specific histamine receptor binding sites in mammalian brain supports the notion that histamine is a central neurotransmitter that may act, in part, through H1 receptors. 5 references.

001065 Cheramy, A.; Michelot, R.; Leviel, V.; Nieoullon, A.; Glowinski, J.; Kerdelhue, B. Groupe NB, Inserm U.114, College de France, 11, place Marcelin Berthelot, F-75231 Paris, Cedex 05, France **Effect of the immunoneutralization of substance P in the cat substantia nigra on the release of dopamine from dendrites and terminals of dopaminergic neurons.** Brain Research (Amsterdam). 155(2):404-408, 1978.

A study of the role of the descending substance P pathway in the activity of nigrostriatal dopaminergic neurons was conducted. The effects of a nigral unilateral application of an antisubstance P rabbit serum on the release of dopamine (DA) from nerve terminals and dendrites of the ipsilateral DA neurons were examined in cats. Nigral application of the serum resulted in a significant reduction of (3H)DA release from dopaminergic terminals in the caudate nucleus, associated with a potent stimulation of (3H)DA release in the substantia nigra. Results suggest that the striatonigral substance P neurons exert a tonic excitatory influence on the nigrostriatal dopaminergic pathway. 21 references.

001066 Childers, Steven R.; Snyder, Solomon H. Department of Pharmacology and Experimental Therapeutics Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Guanine nucleotides differentiate agonist and antagonist interactions with opiate receptors.** Life Sciences (Oxford). 23(7):759-762, 1978.

Differentiation by guanine nucleotides of opiate receptor binding for several agonists and antagonists was studied. Specific binding of 3H-ligands to opiate receptors in rat brain membranes was assayed in the presence or absence of levallorphan. Guanosine-5'-triphosphate (GTP), its stable analogue guanyl-5'-yl-imidodiphosphate and GDP inhibited binding of the 3H-agonists dihydromorphine, etorphine and enkephalins but not the 3H-antagonists naloxone or diprenorphine. GMP, ATP, ADP and AMP failed to alter either agonist or antagonist binding. It is concluded that the effects are more pronounced in the presence than in the absence of sodium. 5 references. (Author abstract modified)

001067 Chipkin, Richard E.; Stewart, John M.; Morris, Dan H. Department of Biochemistry, University of Colorado School of Medicine, Denver, CO 80262 **Substance P and opioid interaction on stimulated and non-stimulated guinea pig ileum.** European Journal of Pharmacology (Amsterdam). 53(1):21-27, 1978.

The interaction of substance-P (SP) and opioids on guinea-pig ileum were examined. On nonstimulated ileal strips, SP caused a dose dependent increase in contraction. Pretreatment of the tissue with morphine (3, 30, 300, or 3000nM), enkephalin (1.42, 14.2, 142, or 1420nM), naloxone (5nM), or atropine (0.114mcM) did not significantly alter the spasmogenic effect of SP. On stimulated ileum, morphine and enkephalin inhibited the electrically induced twitch, but SP resulted in contraction of the tissue. Neither strongly effective nor subthreshold doses of SP antagonized the effects of the narcotics. Results suggest that separate receptors mediate the effects of opiates and SP on guinea-pig ileum. 27 references. (Author abstract modified)

001068 Chiueh, Chuang C.; Kopin, Irwin J. G. R. C., Baltimore City Hospitals, 4940 Eastern Avenue, Baltimore, MD 21224 **Centrally mediated release by cocaine of endogenous epinephrine and norepinephrine from the sympathoadrenal medullary system of unanesthetized rats.** Journal of Pharmacology and Experimental Therapeutics. 205(1):148-154, 1978.

The effect of cocaine on the release of endogenous catecholamines from the sympathoadrenal medullary system into the blood of unanesthetized rats was studied using a radioenzymatic paper chromatographic method for a simultaneous assay of catecholamines. Twenty four hours after arterial cannulation, the basal levels of norepinephrine (NE) and epinephrine (EPI) in blood obtained through the catheter from conscious undisturbed rats were 0.48 plus or minus 0.06 and 0.36 plus or minus 0.06ng/ml, respectively. Administratition, via the arterial catheter, of

cocaine (0.4-10mg/kg) produced dose related increases in NE (0.59 and 0.34ng/ml) and EPI (1.15 plus or minus 0.16 to 6.67 plus or minus 0.46ng/ml). The findings show inhibition of catechol 0-mthyltransferase by tropolone (40 mg/kg) enhanced by five fold to ten fold the maximal response to cocaine without altering significantly the basal plasma levels of EPI or NE. Bilateral splanchnic denervation reduced the cocaine tropolone induced release of EPI or NE by 75% and 50%, respectively. Desipramine (10mg/kg) failed to alter significantly plasma levels of NE or EPI, even after tropolone. It is concluded that the increment in plasma levels of NE and EPI in conscious rats given cocaine is mainly the result of a centrally mediated adrenal medullary discharge of catecholamines, rather than inhibition of catecholamine uptake. 42 references. (Author abstract)

001069 Ciaranello, Roland D. Child Psychiatry Program, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, CA 94305 **Regulation of phenylethanolamine N-methyltransferase synthesis and degradation: I. Regulation by rat adrenal glucocorticoids.** Molecular Pharmacology. 14:478-489, 1978.

The regulation of phenylethanolamine N-methyltransferase synthesis and degradation by rat adrenal glucocorticoids was investigated. It was observed that, following hypophysectomy, enzyme levels fall dramatically. They can be restored to normal by the administration of adrenocorticotrophin or dexamethasone. The decline in enzyme levels after hypophysectomy is accompanied by a decrease in the number of immunotitratable enzyme molecules. The decrease in number of enzyme molecules after hypophysectomy is due to accelerated proteolysis. This is reversed by glucocorticoid administration. Phenylethanolamine N-methyltransferase from hypophysectomized rats is more vulnerable to proteolysis in vivo and to denaturation at 50 degrees in vitro, suggesting that hypophysectomy causes fundamental changes in the overall stability of the enzyme. 28 references. (Author abstract modified)

001070 Clark, W. G.; Lipton, J. M. Department of Pharmacology, Southwestern Medical School, University of Texas Health Science Center, Dallas, TX 75235 **Hyperthermic effect of prostacyclin injected into the third cerebral ventricle of the cat.** Brain Research Bulletin. 4(1):15-16, 1979.

Deep body temperature of unanesthetized, unrestrained cats was recorded automatically following injection of prostacyclin, an unstable product of prostaglandin endoperoxides, into the third cerebral ventricle. Doses of 2-25mcg, in a volume of 0.05ml saline solution, did not appreciably alter body temperature. A 100mcg dose produced hyperthermia in five of six animals. Administration of 1mg prostacyclin prolonged hyperthermic responses in four cats, with a maximum increase in temperature of at least 2.1degrees. Prostaglandin E1 (1mcg) produced hyperthermic responses which were intermediate between responses to 100 and 1000mcg prostacyclin. Indomethacin (2mg/kg, iv) did not hasten the rate of recovery from prostacyclin induced hyperthermia. Results indicate that prostacyclin can contribute to the development of hyperthermia when a sufficient concentration is achieved at a central site of action. 11 references. (Author abstract modified)

001071 Clement-Cormier, Yvonne C.; George, Robert J. Department of Pharmacology, University of Texas Medical School, P. O. Box 20708, Houston, TX 77025 **Multiple dopamine binding sites: subcellular localization and biochemical characterization.** Journal of Neurochemistry (Oxford). 32(3):1061-1069, 1979.

The biochemical and pharmacological characteristics of dopamine agonist and antagonist binding to male Sprague-Dawley rat striatal subcellular fractions were studied in relation to the localization of dopamine sensitive adenylate cyclase activity. The highest specific activity of dopamine sensitive adenylate cyclase was found in the crude synaptic membrane fraction (P2). Using tritiated haloperidol, apomorphine, and spiroperidol as markers for the dopamine receptor, high affinity and stereoselective specific binding was observed for the crude synaptic fraction and the microsomal fraction (P3). Analysis of the binding of (3H)haloperidol to the striatal microsomal preparation revealed a homogenous receptor site with a dissociation constant (Kd) value of 3.0nM. The data for (3H)haloperidol binding to the crude synaptosomal fraction showed two saturable binding sites with Kd values of 2.5nM and 12.5nM. A similar heterogenous binding profile was observed in the P2 fraction using (3H)apomorphine, with Kd values of 1.2nM and 7.2nM. Results indicate that the subcellular localization of multiple binding sites in the crude synaptosomal fraction and the identification of specific binding to purified synaptosomes correlate with the subcellular distribution of striatal dopamine sensitive adenylate cyclase activity. 38 references. (Author abstract modified)

001072 Clow, A.; Jenner, P.; Marsden, C. D. University Department of Neurology, Denmark Hill, London SE5, England **Supersensitivity of cerebral dopamine receptors during on-going chronic (six months) administration of trifluoperazine to rats.** British Journal of Pharmacology (London). 64(3):414P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, supersensitivity of cerebral dopamine (DA) receptors during chronic administration of trifluoperazine in male Wistar rats is reported. In the first 2 weeks, trifluoperazine treated rats showed decreased spontaneous locomotor activity, mild catalepsy, and loss of stereotypy to apomorphine; this evidence for functional blockade of cerebral DA receptors was accompanied by an increase in DA turnover and by inhibition of DA stimulation of striatal adenylate cyclase activity in vitro. Three months from the beginning of drug administration, the initial behavioral and biochemical effects of trifluoperazine had disappeared. After 6 months, however, the trifluoperazine treated rats showed greater stereotyped response to apomorphine than did control rats; DA stimulation of striatal adenylate cyclase was also enhanced in the treated group. Binding of (3H)-spiperone to striatal preparations in the presence and absence of DA showed an increased receptor affinity but no change in the number of striatal binding sites in the treated animals. Results suggest that changes in some cerebral DA receptors occur in the course of continued antipsychotic drug administration. 3 references. (Author abstract modified)

001073 Colburn, Wayne A.; Gibaldi, Milo. Department of Pharmaceutics, School of Pharmacy, SUNY, at Buffalo, Amherst, NY 14260 **Plasma protein binding of diazepam after a single dose of sodium oleate.** Journal of Pharmaceutical Sciences. 67(6):891-892, 1978.

The impairment of plasma protein binding of diazepam after a single intravenous dose of sodium oleate was investigated in male Sprague-Dawley rats. The free fraction of diazepam was elevated significantly in oleate treated rats. Addition of sodium oleate to plasma in vitro to produce concentrations comparable to those found 3 hours after administration in vivo had virtually no effect on diazepam binding. It is suggested that the prolonged impaired ability of plasma to bind diazepam after sodium oleate administration is related to a slowly reversible change in the plasma proteins induced by the initially high concentrations of oleate or to the persistence of biotransformation products that can displace diazepam from binding sites. 2 references.

001074 Cooke, S. Pharmacology Laboratories, Department of Pharmacy, University of Nottingham, Nottingham, England **Effect of short- and long-term administration of some anticonvulsant drugs on the folate content of rat brain.** British Journal of Pharmacology (London). 64(3):407P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of anticonvulsant drugs on the folate content of Wistar rat brain are described. The folate content of brains of rats treated with increasing doses of barbitone sodium for 5 weeks was 550ng/g, compared to 675-700ng/g in untreated rats. After the drug was withdrawn, the brain rapidly accumulated folate, reaching a concentration greater than 900ng/g by the time seizure susceptibility was at its height. Rats given phenobarbitone for 6 weeks also showed hyperexcitability when the drug was withdrawn and peak brain concentrations of folate when seizure susceptibility was at its height; these animals showed no significant reductions in whole brain folate concentrations during the period of drug administration, however. Carbamazepine and diphenylhydantoin had essentially the same effects as phenobarbitone. Single intraperitoneal doses of the anticonvulsant drugs had no effect on the folate content of brain, and changes in serum folate were not detected at any time. 2 references. (Author abstract modified)

001075 Cools, A. R. Department of Pharmacology, University of Nijmegen, P.O.B. 9101, 6500 HB Nijmegen, The Netherlands **Haloperidol and the significance of alpha-NE mediated control of a subpopulation of DA receptors for concepts such as supersensitivity and tolerance: a behavioral study of cats.** Life Sciences (Oxford). 23(22):2475-2483, 1978.

Factors affecting the sensitivity of two distinct subpopulations of dopamine (DA) receptors in the cat caudate nucleus were studied, following single or repeated injections of DA, apomorphine, haloperidol, ergometrine, (3,4-dihydroxyphenylamino)-2-imidazoline, noradrenaline (NE), oxymetazoline, and phentolamine. Haloperidol, which antagonizes the DAe receptor subpopulation, increased the activity of DAi (haloperidol insensitive) receptors as a result of its ability to block the alpha-adrenergic mechanism that regulates the activity of DAi receptors. This phenomenon may contribute to the development of supersensitivity to DA and related agents after neuroleptic treatment. Tolerance of the DAe and DAi receptors to their corresponding agonists and antagonists did not develop following a short-term chronic treatment, but tolerance of the alpha-NE mechanism controlling the activity of the DAi receptors did develop. The development of tolerance to DA and related agents following treatment with haloperidol was due to the occurrence of adaptational changes at the level of the alpha-NE mechanism rather than to the occurrence of such changes at the level of the DA receptors. 48 references. (Author abstract modified)

001076 Cooper, Marie; Wyllie, J. H. no address **Some properties of 5-hydroxytryptamine receptors in the hindquarters of the rat.** British Journal of Pharmacology (London). 64(3):389P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, properties of 5-hydroxytryptamine (5HT) receptors in the hindquarters of the Wistar rat are reported. Dose response curves were made for 5HT, nonadrenaline (NA) and various agonists and antagonists perfused into the distal aorta. Both methysergide and cyproheptadine showed a noncompetitive type of block. Phentolamine and a homologous series of phenothiazines (promazine, chlorpromazine, and triflupromazine) produced parallel displacement of the dose response curves. In this preparation, 5HT showed no vasodilator activity. Vasospasm produced by 5HT and NA was mediated by different receptors, but no evidence was obtained of heterogeneity of 5HT receptors. The activity of the phenothiazines against 5HT induced vascular spasm ran parallel to their potency as tranquillizers. (Author abstract modified)

001077 Coscina, Donald V.; Daniel, Juri; Warsh, Jerry J. Section of Biopsychology, Clarke Institute of Psychiatry, 250 College Street, Toronto, Ontario M5T 1R8, Canada **Potential nonserotonergic basis of hyperphagia elicited by intraventricular p-chlorophenylalanine.** Pharmacology Biochemistry and Behavior. 9(6):791-797, 1978.

The investigation of a potential nonserotonergic basis of hyperphagia elicited by intraventricular p-chlorophenylalanine (pCPA) is described. The dose response nature of the hyperphagia was confirmed using 2,3, and 4mg dose of pCPA, but control infusions of 2,3, and 4mg of pCPA's parent amino acid, phenylalanine in methylester-HCl form, produced dose dependent hyperphagia of equivalent magnitude and duration. In addition, no association was observed between the occurrence of hyperphagia elicited by either compound and depletion of forebrain serotonin (5-HT). A number of pharmacological and neurological factors potentially operative in explaining these findings are discussed. Becuase it is possible to dissociate central pCPA induced hyperphagia from forebrain 5-HT loss, these data question the specificity of this method in elaborating hypothesized roles of this brain monoamine in the control of feeding. 33 references. (Author abstract modified)

001078 Costall, Brenda; Naylor, Robert J. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford, West Yorkshire, England **Neuroleptic interaction with the serotoninergic-dopaminergic mechanisms in the nucleus accumbens.** Journal of Pharmacy and Pharmacology (London). 30(4):257-259, 1978.

A 5-hydroxytryptamine (5-HT) agonist and antagonists were used to analyze the possible contribution of 5-HT mechanisms to the antagonistic effects of neuroleptics against the dopamine hyperactivity from the accumbens in male Sprague-Dawley rats. Threshold and maximum effects of hyperactivity induced by dopamine were not modified by the intraperitoneal administration of either cyproheptadine or methysergide administered 2.5hours after the dopamine injection, but 5-HT injected bilaterally into the nucleus accumbens 2.5hours after dopamine caused a dose dependent decrease in the hyperactivity. This effect of 5-HT was antagonized by a 30 minute pretreatment with cyproheptadine or methysergide. The neuroleptic agents, haloperidol, thioridazine and clozapine were each administered intraperitoneally 2 hours after the bilateral injection of dopamine into the nucleus accumbens and each antagonized the hyperactivity in a dose dependent manner. The implications of the results of these and additional experiments in which two doses of each neuroleptic were selected which caused a moderate and marked reduction in the dopamine hyperactivity which were antagonized by methysergide and cyproheptadine administered peripherally as a 30 minute pretreatment are discussed. 16 references.

001079 Cote, Ila L.; Zbicz, Kerry L.; Wilson, Wilkie A. Department of Physiology, University of New Mexico, Albuquerque, NM 87106 **Barbiturate-induced slow outward currents in Aplysia neurones.** Nature (London). 274(5671):594-596, 1978.

Barbiturates at low concentrations (0.05-0.5mM) had profound effects on voltage sensitive conductances in Aplysia californica neurons. Barbiturates (sodium pentobarbital or sodium phenobarbital) suppressed the ability of these neurons to fire continuously in response to prolonged depolarization. Voltage clamp analysis revealed the membrane currents underlying this effect,

indicating that barbiturates act by enhancement of a slowly developing outward current that appears in response to depolarization of the cell. 18 references.

001080 Crain, Stanley M.; Crain, Bea; Peterson, Edith R.; Simon, Eric J. Departments of Neuroscience and Physiology, Albert Einstein College of Medicine, Yeshiva University, Bronx, NY 10461 **Selective depression by opioid peptides of sensory-evoked dorsal-horn network responses in organized spinal cord cultures.** Brain Research (Amsterdam). 157(1):196-201, 1978.

A series of endorphins and related synthetic opioid pentapeptides with a wide range of analgesic potencies produced selective depressant effects on the sensory evoked dorsal horn network discharges of fetal mouse spinal cord explants with attched sensory dorsal root ganglia (DRG). The sensory network depressant potencies of this series of opioid peptides in the cord/DRG cultures were remarkably proportionate to their analgesic potencies in intact rodents, even in the absence of the brainstem monoaminergic systems which normally regulate the opioid networks in the dorsal spinal cord. These results indicate that organotypic cord/DRG cultured alone and with monoaminergic brainstem explants provide a useful model system for studying the mode of action endorphins and related opioid agents during development of opioid networks in fetal and neonatal CNS. 21 references.

001081 Crampton, E. L.; Dickinson, W.; Haran, G.; Marchant, B.; Risdall, P. C. Research Department, Boots Co. Ltd., Nottingham NG2 3AA, England **The metabolism of dothiepin hydrochloride in vivo and in vitro.** British Journal of Pharmacology (London). 64(3):405P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, a study of the metabolism of the tricyclic antidepressant dothiepin is described. Following a single oral dose of (14C)dothiepin hydrochloride in rat, dog, cat, baboon, and human, absorption was rapid in all species; elimination of radioactivity from the circulation was slower in human and baboon than in dog, cat, and rat. In all species, 49.0-61.7% of the dose was recovered in the urine and 14.9-41.0% in the feces, In human urine, the major basic metabolites were northiadene S-oxide and dothiepin S-oxide. Northiaden metabolites were northiadene S-oxide and dothiepin S-oxide. Northiadene S-oxide was the major urinary metabolite in baboon and rat, and dothiepin S-oxide was the major metabolite in the cat. 6 references. (Author abstract modified)

001082 Creese, Ian, Snyder, Solomon H. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **3H-spiroperidol labels serotonin receptors in rat cerebral cortex and hippocampus.** European Journal of Pharmacology (Amsterdam). 49(2):201-202, 1978.

Butaclamol displaceable (3H)spiroperidol binding was demonstrated in the corpus striatum, frontal cortex, and hippocampus in rat brain. The relative and absolute potencies of dopaminergic, serotonergic, and noradrenergic agonists in displacing (3H)spiroperidol binding differed markedly between the corpus striatum and cerebral cortex or striatum. Dopamine and apomorphine were 30-100 times more potent in reducing striatal than cerebral cortical or hippocampal (3H)spiroperidol binding. By constrast, serotonin and bufotenine were 25 and 50 times more potent, respectively, in hippocampus than in corpus striatum, with intermediate potentcies in cerebral cortex. Dopamine was 20 times more potent than serotonin in the striatum, but was 50 and 130 times weaker than serotonin in cortex and hippocampus, respectively. Results indicate that butaclamol displaceable (3H)spiroperidol binding labels both dopamine and serotonin receptors in the cerebral cortex, whereas (3H)spiroperidol binding in the hippocampus appears to involve serotonin receptors exclusively. 5 references.

001083 Crews, Fulton Timm. University of Michigan **The effects of acute and chronic administration of desipramine, a tricyclic antidepressant, on adrenergic nerve function. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7813630, HC$15. MF$7.50. 142 p. 1978.

A study aimed at comparing the acute and chronic actions of desipramine (DMI) on several components of adrenergic nerve transmission is presented. The components investigated were the endogenous norepinephrine (NE) content, norepinephrine uptake and retention, norepinephrine metabolism, presynaptic and postsynaptic receptor sensitivity, and the neuronal release of norepinephrine. Preliminary studies with in vitro DMI indicate that concentrations of DMI below .1mcM block neuronal membrane transport in the brainstem, hypothalamus, and cortex while they have no effect on caudate transport. Higher concentrations of DMI affected both neuronal membrane transport as well as vesicular transport and binding in all four brain regions. In certain brain regions a marked red blockade of norepinephrine uptake occurred acutely and was maintained throughout the 3 week period of DMI administration. Results also indicate that the chronic administration of DMI causes a subsensitivity of presynaptic alpha-receptors which leads to a marked facilitation of NE release during adrenergic nerve stimultation. (Journal abstract modified)

001084 Crow, T. J.; Deakin, J. F. W.; File, S. E.; Longden, A.; Wendlandt, S. Division of Psychiatry, Clinical Research Centre, Northwick Park Hospital, Harrow, HA1 3UJ, England **The locus coeruleus noradrenergic system -- evidence against a role in attention, habituation, anxiety and motor activity.** Brain Research (Amsterdam). 155(2):249-261, 1978.

The effects of 6-hydroxydopamine lesions of the locus coeruleus (LC) noradrenergic system on general motor behavior, exploration, and responsiveness to novel physical and social environments were studied in adult male Norwegian rats. Lesioned animals showed normal motor activity and exploration and normal habituation of these behaviors. The lesioned rats showed no increased susceptibility to distracting auditory stimuli while licking for water, and lesioned and control groups did not differ in their rate of habituation or dishabituation to these stimuli. In a social interaction test, lesioned animals showed a decrease in social contacts in an unfamiliar situation of similar magnitude to that seen in the control group, but engaged in more aggressive behavior than controls. These findings are not compatible with the hypothesis that the LC system is an integral part of the physiological mechanisms that control gross motor behavior, attention, habituation, or anxiety. Together with previous findings with the benzodiazepines, these results indicate that it is unlikely that the benzodiazepines exert their anxiolytic effects by inhibiting the LC system. 37 references. (Author abstract modified)

001085 Cuypers, J.; Cuevas, A.; Duisberg, R. Neurochirurgische Klinik am Klinikum Charlottenburg, Spandauer Damm 130, D-1000 Berlin 19, Germany **Effect of indomethacin on CO2-induced hyperaemia (CO2-response) in the rabbit brain.** Neurochirurgia (Stuttgart). 21(2):62-64, 65-66, 1978.

The question whether indomethacin, a prostaglandin synthesis inhibitor, influences cerebral hyperemia induced by inhalation of carbon dioxide (CO2 response) was studied in rabbits. In an experiment designed to show whether prostaglandins are involved in the regulation of cerebral vascular tone, the animals were repeatedly ventilated with a CO2 room air mixture before and

after the injection of indomethacin solution. Regional cerebral blood flow in one hemisphere was continuously measured by a thermoclearance method. In 10 out of 13 rabbits no effect of indomethacin on the CO2 response could be observed. In the other three animals a reduction of the CO2 response only occurred in the 15 to 45 minute interval after the indomethacin injection. The possibility that this reduction is an artifact is not excluded. The possibility that species of animal used can affect results is mentioned. 20 references. (Author abstract modified)

001086 Dafny, N.; Brown, M.; Burks, T. F.; Rigor, B. M. University of Texas Medical School, Houston, TX 77025 **Morphine tolerance and dependence: sensitivity of caudate nucleus neurons.** Brain Research (Amsterdam). 162(2):363-368, 1979.

The effects of systemic morphine administration on caudate nucleus neurons were investigated in unanesthetized, freely moving male Sprague-Dawley rats. Morphine produced dose related changes in spontaneous firing rate in caudate neurons; these changes were antagonized by naloxone. Morphine in doses greater than 1mg/kg tended to decrease spike activity; 10 of 20 units tested showed biphasic responses to incrementing doses of morphine. Altered responses to morphine challenge after 5 days of chronic morphine treatment (no response to challenge dose or reversal in direction of response) reflected the development of morphine tolerance. 19 references.

001087 Davies, J.; Polc, P. Department of Pharmacology, School of Pharmacy, University of London, 29/39 Brunswick Square, London WC1N 1AX, England **Effect of a water soluble benzodiazepine on the responses of spinal neurones to acetylcholine and excitatory amino acid analogues.** Neuropharmacology (Oxford). 17(3):217-220, 1978.

The effects of a new water soluble benzodiazepine, RO-21-3981, on responses of spinal neurons in the pentobarbitone anesthetized cat to acetylcholine (Ach) and the amino acid analogues N-methyl-D-aspartate and kainate were determined using the microiontophoretic technique. RO-21-3981 reduced the sensitivity of neurons to all three excitants. However, on spinal Renshaw cells iontophoretic RO-21-3981 reduced Ach responses more than amino acid responses. Administered intravenously, RO-21-3981 depressed dorsal root but not ventral root responses of Renshaw cells. The possible mechanism for the effects of RO-21-3981 are discussed. 10 references. (Author abstract)

001088 Davis, Mary E.; Akera, Tai; Brody, Theodore M. Department of Pharmacology and Toxicology, Michigan State University, East Lansing, MI 48824 **(D-alanine2)-methionine enkephalinamide binding to rat brain slices: differences from opiate alkaloid binding and reduction by chronic morphine treatment.** Life Sciences (Oxford). 23(27&28):2675-2680, 1978.

The binding of a metabolically stable enkephalin analog, (d-alanine2)-methionine-enkephalinamide (DALA), was characterized in male Sprague-Dawley rat brain slices. Unlike morphine or naloxone binding, which showed positive cooperativity in these preparations, DALA binding did not exhibit homotropic activation. The amount of DALA bound was less in artificial cerebrospinal fluid than in Tris buffer. Reduced binding was observed in both media with slices obtained from animals rendered tolerant to morphine by pellet implantation. Results indicate that DALA and opiate drugs occupy the same binding sites, but that the characteristics of the binding of the enkephalins and the alkaloids are different. 23 references. (Author abstract)

001089 Day, M. D.; Sempik, J. Department of Physiology and Pharmacology, The Medical School, Queen's Medical Centre, Nottingham, England **Effect of centrally administered noradrenaline and isoprenaline on splanchnic nerve activity in anaesthetised and conscious cats.** British Journal of Pharmacology (London). 64(3):393P-394P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of centrally administered noradrenaline (NA) and isoprenaline on splanchnic nerve activity in anesthetized and conscious cats are reported. Intravenous injection of NA caused a brief rise in arterial blood pressure associated with a reflex bradycardia and a fall in splanchnic nerve activity. In contrast, infusion of NA into the third ventricle caused an increase in blood pressure and heartrate with a concomitant increase in splanchnic nerve activity. Infusion of isoprenaline into the third ventricle also caused rises in arterial blood pressure and splanchnic nerve activity. These results indicate that pressor responses evoked by the administration of NA or isoprenaline into the third ventricle are elicited by actions of these substances on structures within the brain. 4 references. (Author abstract modified)

001090 Deckardt, Klaus; Pujol, Jean-Francois; Belin, Marie-Francoise; Seiler, Nikolaus; Jouvet, Michel. Badische Anilin und Sodafabrik, D-67, Ludwigshafen, Rhein, Germany **Increase of ornithine decarboxylase activity elicited by reserpine in the peripheral and central monoaminergic systems of the rat.** Neurochemical Research. 3(6):745-753, 1978.

A single ip dose of 16mcmol/kg reserpine in male rats produced a 9-10 fold increase in ornithine decarboxylase activity in adrenal glands and in brain regions containing aminergic neurons (substantia nigra, nucleus raphe centralis, nucleus raphe pontis, and the locus coeruleus). Maximal enzyme activity in the adrenal glands was observed about 8 hours after reserpine administration. The ornithine decarboxylase activity time curves in the brain regions showed a concomitant polyphasic course, with the maximum at 12 hours postinjection. Ornithine decarboxylase induction is discussed as an early event in the cascade of molecular events preceding the induction of cell typic enzymes. 34 references. (Author abstract modified)

001091 Dehpour, A. R.; Hosseinzadeh, K.; Khoyi, M. A. Department of Pharmacology, Faculty of Medicine, University of Tehran, Tehran, Iran **Effect of methoxamine on the outflow of (3H)-noradrenaline from rat vas deferens.** British Journal of Pharmacology (London). 64(3):418P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of methoxamine on the outflow of (3H)noradrenaline from rat deferens are reported. Methoxamine increased the rate of outflow coefficient for (3H)noradrenaline by 84%. This effect of methoxamine was prevented by pretreatment of the tissue with cocaine or desipramine. Reserpine pretreatment significantly potentiated the effects of noradrenaline in this tissue, but not of methoxamine. Results suggest that methoxamine has a small indirect effect in addition to its main direct action. 5 references. (Author abstract modified)

001092 Denavit-Saubie, M.; Champagnat, J.; Zieglgansberger, W. Centre National de la Recherche Scientifique, Departement de Neurophysiologie appliquee, F-91190, Gif-sur-Yvette, France **Effects of opiates and methionine-enkephalin on pontine and bulbar respiratory neurones of the cat.** Brain Research (Amsterdam). 155(1):55-67, 1978.

The effects of microelectrophoretically applied opiate agonists and the antagonist naloxone were investigated on extracellularly recorded neurones in pontine and bulbar respiratory centers of the cat. Morphine, levorphanol and methionine enkephalin depressed the spontaneous discharge of respiration related units and the firing induced in these cells by phoretically applied L-

glutamate. The rhythmic patterns of these neurones was modified such that basal activity was hardly affected while peak frequency was markedly reduced. These effects are mediated via stereospecific opiate receptors, since they were antagonized by naloxone and not mimicked by the D enantiomer of levorphanol, dextrorphan. The few excitations observed following opiate agonist application were not antagonizable by naloxone. The data may provide a basis for the explanation of the depressant effect on central respiratory rhythm of systemically injected opiates which have been obtained in control experiments. The results are interpreted in terms of opiates lowering excitatory synaptic efficacy. 41 references. (Author abstract)

001093 Di Chiara, G.; Onali, P. L.; Tissari, A. H.; Porceddu, M. L.; Morelli, M.; Gessa, G. L. Institute of Pharmacology, University of Cagliari, I-09100 Cagliari, Italy **Destruction of post-synaptic dopamine receptors prevents neuroleptic-induced activation of striatal tyrosine hydroxylase but not dopamine synthesis stimulation.** Life Sciences (Oxford). 23(7):691-696, 1978.

An experiment to determine why destruction of postsynaptic dopamine (DA) receptors by intrastriatal kainic acid prevents the haloperidol induced activation of striatal tyrosine hydroxylase but not the stimulation of DA synthesis was conducted using anesthetized rats. The results indicate the existence of two DA receptor mediated mechanisms regulating DA synthesis in vivo: one dependent on the presence of postsynaptic DA receptors and capable of producing a stable activation of tyrosine hydroxylase whereas the other is not associated to a persistent conformational change of tyrosine hydroxylase and is possibly mediated by presynaptic DA receptors. The results also indicate that the activation of striatal tyrosine hydroxylase by neuroleptics is unrelated to blockade of presynaptic DA receptors. 32 references. (Author abstract modified)

001094 Di Giulio, Anna M.; Groppetti, Antonio; Cattabeni, Flamino; Galli, Corrado L.; Maggi, Adriana; Algeri, Sergio; Ponzio, Franca Institute of Pharmacology, School of Medicine, University of Milan, Via Vanvitelli 32, Milan, Italy **Significance of dopamine metabolites in the evaluation of drugs acting on dopaminergic neurons.** European Journal of Pharmacology (Amsterdam). 52(2):201-207, 1978.

Changes in striatal concentrations of 3-methoxytyramine (3-MT), homovanillic acid (HVA), and 3,4-dihydroxyphenylacetic acid (DOPAC) were studied in male Sprague-Dawley rats following systemic administration of drugs that alter dopamine (DA) release. Change in 3-MT concentration, unlike those in DOPAC or HVA, seemed to reflect the functional activity of dopaminergic neurons. Drugs believed to increase or decrease DA content in the synaptic cleft produced predictable changes in striatal 3-MT. Cocaine, nomifensine, and d-amphetamine increased 3-MT concentrations, whereas gamma-butyrolactone, alpha-methyltyrosine, and apomorphine decreased it. 38 references. (Author abstract modified)

001095 Di Renzo, G. F.; Quattrone, A.; Schettini, G.; Preziosi, P. Department of Pharmacology, II Faculty of Medicine, Via S. Pansini 5, I-80131 Naples, Italy **Effect of selective lesioning of serotonin-containing neurons on the TSH-inhibiting action of d-fenfluramine in male rats.** Life Sciences (Oxford). 24(6):489-494, 1979.

The effects of selective lesions of brain serotoninergic neurons on the thyrotropin (TSH) inhibiting action of d-fenfluramine were studied in male Wistar rats. Raphe lesion, which selectively decreased brain serotonin (5-HT), prevented the effect of d-fenfluramine on TSH secretion. Intraventricular injection of the neurotoxin 5,7-dihydroxytryptamine to desipramine pretreated rats, which caused substantial damage to central serotoninergic systems without affecting catecholamine containing neurons, also blocked the inhibitory effect of d-fenfluramine on TSH release. Results are compatible with the hypothesis that brain 5-HT plays an inhibitory role in the control of thyrotropin releasing hormone/TSH secretion in male rats. 19 references. (Author abstract)

001096 Doggrell, S. A.; Paton, D. M. Dept. of Pharmacology and Clinical Pharmacology, School of Medicine, University of Auckland, Private Bag, Auckland, New Zealand **Effects of prazosin and phentolamine on responses to field stimulation and to noradrenaline in vas deferens and anococcygeus muscle of the rat.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 233(2):209-220, 1978.

The effects of phentolamine and prazosin on contractile responses in the presence of cocaine or nortriptyline were investigated in vas deferens and anococcygeus muscle of rat. Cocaine and nortriptyline had no effect on maximum responses to field stimulation, (-)-noradrenaline, methoxamine, and acetylcholine in anococcygeus muscle. However, both cocaine and nortriptyline potentiated maximum responses to (-)-noradrenaline without altering the maximum response to field stimulation in vas deferens. In vas deferens, phentolamine potentiated or inhibited the responses to field stimulation depending on the frequency, whereas prazosin inhibited all responses to field stimulation. In anococcygeus muscle, both phentolamine and prazosin inhibited all responses to field stimulation. In vas deferens and anococcygeus muscle, prazosin was a more potent antagonist of responses to (-)-noradrenaline than phentolamine. Results indicate that prazosin is a more potent postsynaptic alpha-adrenoceptor antagonist than phentolamine and suggest that prazosin has little or no affinity for presynaptic alpha-adrenoceptors. 22 references. (Author abstract modified)

001097 Doggrell, Sheila A.; Woodruff, G. N. Department of Physiology and Biochemistry, University of Southampton, Bassett Crescent East, Southampton S09 3TU, England **Effects of nomifensine on noradrenaline accumulation and contractile responses in the rat anococcygeus muscle.** Journal of Pharmacy and Pharmacology (London). 30(4):264-266, 1978.

The effects of nomifensine on the accumulation of noradrenaline and on the contractile responses to exogenously applied noradrenaline in the rat anococcygeus muscle were examined. Parallel experiments are performed in which the effects of nomifensine and cocaine on noradrenaline accumulation were studied. Nomifensine was found to be a potent inhibitor of noradrenaline accumulation in the rat anococcygeus muscle, having a similar potency to nortriptyline. The results suggest that nomifensine potentiates contractile responses to noradrenaline by two mechanisms: by inhibiting noradrenaline uptake and by postsynaptic action. 6 references.

001098 Downs, David A. Department of Pharmacology, Warner-Lambert/Parke-Davis, Pharmaceutical Research Division, 2800 Plymouth Road, Ann Arbor, MI 48105 **Interactions of acetylmethadol or methadone with other drugs in rhesus monkeys.** Pharmacology Biochemistry and Behavior. 10(3):407-414, 1979.

The behavioral effects and blood or plasma levels of d-amphetamine, ethanol, cocaine, and diazepam were examined in male rhesus monkeys treated chronically with alpha-l-acetylmethadol (LAAM), methadone, or vehicle. Chronic treatment with the opiates failed to alter blood or plasma levels and behavioral effects of d-amphetamine or ethanol. Monkeys maintained on LAAM were somewhat less sensitive to the rate decreasing effects of cocaine on schedule controlled responding, but cocaine plasma levels and half lives generally did not differ

across chronic treatment conditions. Behavioral depression after diazepam was prolonged substantially in monkeys maintained on LAAM or methadone, but blood levels of diazepam and metabolites were not prolonged or increased in these animals. Naloxone partially antagonized the residual depression 24 hours after diazepam in LAAM and methadone treated monkeys, but not in vehicle treated animals. Thus, diazepam appeared to interfere with the metabolic inactivation of the opiates. 21 references. (Author abstract modified)

001099 Dreyfus, Cheryl F.; Gershon, Michael D.; Crain, Stanley M. Department of Neuroscience, Albert Einstein College of Medicine, Bronx, NY 10461 **Innervation of hippocampal explants by central catecholaminergic neurons in co-cultured fetal mouse brain stem explants.** Brain Research (Amsterdam). 161(3):431-445, 1979.

Organotypic explants of 18-day-old fetal mouse brainstem containing the locus coeruleus were grown in coculture with hippocampal explants to determine whether central catecholaminergic neurons are capable of growing to and establishing functional connections with one of their normal target tissues in vitro. Brainstem explants showed specifically fluorescent catecholaminergic cell bodies and varicose fibers after 2 to 4 weeks in culture, but no fluorescent cells of neurites were seen in isolated hippocampal cultures grown for 2 to 3 weeks in vitro. When hippocampal explants were grown near brainstem explants, catecholaminergic fibers grew out of the brainstem and entered the hippocampus. Radioautographic analyses revealed that brainstem neurites that entered the hippocampus took up norepinephrine, whereas, neurites in the isolated hippocampal explants did not. Electrophysiological studies suggest that the catecholaminergic neurites within the hippocampus are functional. Propranolol enhanced complex hippocampal responses to brainstem or hippocampal stimuli in hippocampus/brainstem cocultures, but not in isolated hippocampal explants. Propranolol also enhanced hippocampal responses in cocultures after acute surgical extirpation of the brainstem explant. 33 references. (Author abstract modified)

001100 Dribin, Lori B.; Jacobson, Marcus. Jacobson: Dept. of Anatomy, College of Medicine, University of Utah Medical Center, Salt Lake City, UT 84132 **Effects of 5-bromodeoxyuridine on development of Mauthner's neuron and neural retina of Xenopus laevis embryos.** Brain Research (Amsterdam). 150(3):543-557, 1978.

Bromodeoxyuridine (BrUdR) injected into Xeonpus embryos at stages before, during, or after the last period of DNA synthesis in Mauthner's neurons had no serious effect on differentiation of Mauthner's neurons. However, the BrUdR caused widespread cell degeneration in the central nervous system. The action of BrUdR on retina neuronal differentiation depended on dose and stage of injection. At all doses (0.005.09mcg per injection), and all stages (22-29), the main effect was retina cell degeneration. The drug produced complete absence of differentiated retina neurons only when given at early stages (22-24) and at the highest doses that enabled the embryo to survive to stage 44. At stages 22-24 at lower doses and at stages 26-29 at all doses, some retinal neurons differentiated, although retinal cell degeneration was the main effect. It is concluded that in these two systems, BrUdR did not selectively inhibit neuronal differentiation. 26 references. (Author abstract)

001101 Duchemin, Anne-Marie; Quach, Tam Than; Rose, Christiane; Schwartz Jean-Charles. Unite 109 de Neurobiologie, Centre Paul Broca de l'INSERM, 2ter, rue d'Alesia F-75014 Paris, France **Pharmacological characterization of 3H-LSD binding sites in mouse brain in vivo.** Life Sciences (Oxford). 24(5):401-409, 1979.

In male Swiss-Webster mice given low iv doses of lysergic acid diethylamide (LSD), the subsequent accumulation of radioactivity in brain demonstrated selective binding to high affinity sites (as indicated by the heterogenous regional distribution and the saturable nature of the process). In cortex, the specific accumulation of 3H-LSD was prevented by serotonin antagonists (cyproheptadine, methysergide, and methiopen), by tryptamine derivatives (Psilocin, psilocybin, and dimethyltryptamine), and by 5-hydroxytryptophan in combination with pargyline. The neuroleptics spiperone and haloperidol prevented 3H-LSD binding, but pimozide was ineffective. Morphine and a variety of adrenergic and cholinergic agents were also ineffective. Results suggest that LSD binds selectively to cortical serotonin receptors. 24 references. (Author abstract modified)

001102 Dyck, Lillian E. Psychiatric Research Division, University Hospital, Saskatoon, Saskatchewan, Canada S7N OW8 **Uptake and release of meta-tyramine, para-tyramine, and dopamine in rat striatal slices.** Neurochemical Research. 3(6):775-791, 1978.

The uptake and release of meta-tyramine (m-TA) and p-tyramine (p-TA) were compared with those of dopamine (DA) in male Wistar rat striatal slices. The uptake of each amine was reduced by cocaine and by low concentrations of sodium ions; the low sodium treatment appeared to act more selectively on the tyramines. The absence of calcium ions enhanced the spontaneous efflux of all three amines, particularly p-TA and m-TA, partially as a result of an inhibition of calcium dependent reuptake. Potassium stimulated the release of DA, p-TA, and m-TA. Removal of calcium decreased the potassium stimulated release of DA and had biphasic effects on potassium evoked release of m-TA and p-TA, depending on the duration of calcium removal. 35 references. (Author abstract modified)

001103 Ebadi, M.; Govitrapong, P. Department of Pharmacology, University of Nebraska College of Medicine, Omaha, NE 68105 **Biogenic amine-mediated alteration of pyridoxal phosphate formation in rat brain.** Journal of Neurochemistry (Oxford). 32(3):845-853, 1979.

The interaction between pyridoxal kinase and biogenic amines, their precursors and metabolites was investigated in male Sprague-Dawley rat brain homogenates. DOPA, dopamine, norepinephrine, tyramine, serotonin, histamine, and gamma-aminobutyric acid inhibited pyridoxal kinase. Tyrosine, 5-hydroxytryptophan, histidine, glutamic acid, hypotaurine, and taurine had no inhibitory effects. Tetrahydroisoquinoline derivatives formed from Pictet-Spengler condensation between DOPA, dopamine, and norepinephrine with pyridoxal and pyridoxal phosphate did not inhibit pyridoxal kinase. These results suggest that interaction of biogenic amines with pyridoxal kinase may alter the formation of pyridoxal phosphate, which in turn may influence the activity of numerous pyridoxal phosphate dependent enzymatic reactions in brain. 47 references. (Author abstract modified)

001104 Eccles, R.; Maclean, A.G. Department of Physiology, University College Cardiff CFI IXL, Wales **The influence of an extraneuronal compartment on the relaxation of the cat nictitating membrane in vivo.** British Journal of Pharmacology (London). 62(4):563-566, 1978.

Contractions of the cat nictitating membrane were elicited by the stimulation of the internal carotid nerve, and the effects were studied of desipramine and two inhibitors of catechol-O-methyltransferase, U-0521 and pyrogallol, on the subsequent relaxation of the muscle. The relaxation of the nictitating membrane occurred in at least two phases. The late phase of relaxation was prolonged after increase in the period of nerve stimu-

lation and the duration of this phase was further prolonged after treatment with pyrogallol. After inhibition of neuronal uptake of noradrenaline with desipramine both the early and late phases of relaxation were increased in duration, and subsequent administration of pyrogallol or U-0521 caused a further increase in the duration of the late phase of relaxation. The results suggest that the late phase of relaxation of the nictitating membrane is influenced by efflux of noradrenaline from an extraneuronal pool. 13 references. (Author abstract)

001105 Eccleston, D.; Nicolaou, N. Department of Psychiatry, Royal Victoria Infirmary, Newcastle-upon-Tyne, NE1 4LP, England **The influence of L-tryptophan and monoamine oxidase inhibitors on catecholamine metabolism in rat brain.** British Journal of Pharmacology (London). 64(3):341-345, 1978.

Whole concentrations of 5-hydroxyindoleacetic acid (5-HIAA), homovanillic acid (HVA), dihydroxyphenylacetic acid (DOPAC), 3-methoxy-4-hydroxyphenyl glycol (MHPG), normetanephrine, noradrenaline (NA), and dopamine (DA) were measured in male Wistar rats 1 hour after intraperitoneal injection of 100mg/kg L-tryptophan, with or without pretreatment with a nonoamine oxidase inhibitor (phenelzine, 20mg/kg). L-Tryptophan alone increased the concentration of 5-HIAA, HVA, DOPAC, MHPG, and normetanephrine; the concentration of NA did not change, but that of DA increased significantly. In animals pretreated chronically with phenelzine, trypotphan increased the concentration of DOPAC and HVA over levels obtained after phenelzine alone. Results suggest either a release of DA and NA by 5-hydroxytryptamine, with a compensatory increase in their synthesis, or an increase in the firing of dopaminergic and noradrenergic neurons after L-tryptophan. 21 references. (Author abstract modified)

001106 Edvinsson, L.; Hardebo, J. E. Department of Histology, University of Lund, S-223 62 Lund, Sweden **Demonstration of 5-hydroxytryptamine receptors through inhibition by methergoline in cat pial arteries in vitro.** British Journal of Pharmacology (London). 64(2):281-283, 1978.

In a study of the 5-hydroxytryptamine (5-HT) induced contraction of intracranial vessels, the middle cerebral artery of the cat was exposed to 5-HT and the specific 5-HT receptor antagonist methergoline under standardized conditions in vitro. Methergoline, in increasing concentrations, produced a parallel shift of the log dose response curve for 5-HT. These findings support the assumption that the 5-HT induced intracranial vasoconstriction is mediated by specific 5-HT receptors. 11 references. (Author abstract modified)

001107 Elazar, Zeev; Motles, Elias; Ely, Yona; Simantov, Rabi. Department of Physiology and Pharmacology, Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel **Acute tolerance to the excitatory effect of enkephalin microinjections into hippocampus.** Life Sciences (Oxford). 24(6):541-548, 1979.

Microinjections of 1-20mcg of leu-enkephalin into the dorsal hippocampus of encephale isole cats and urethane anesthetized rats produced long-lasting changes in the hippocampal EEG. These changes were prevented by previous microinjections of naloxone at the same site. With repeated microinjections of enkephalin, progressively higher doses were necessary to produce effects comparable to that of the initial injection. Results suggest that acute tolerance may develop to the epileptogenic effect of leu-enkephalin in hippocampus. 19 references. (Author abstract modified)

001108 Elchisak, M. A.; Polinsky, R. J.; Ebert, M. H.; Powers, K. J.; Kopin, I. J. Laboratory of Clinical Sciences, NIMH, Bethesda, MD 20014 **Contribution of plasma homovanillic acid (HVA) to urine and cerebrospinal fluid HVA in the monkey and its pharmacokinetic disposition.** Life Sciences (Oxford). 23(22):2339-2347, 1978.

Homovanillic acid (HVA) labeled with two deuterium atoms (d2-HVA) was used to determine the contribution of HVA in the blood to HVA in the urine and cerebrospinal fluid (CSF) of male rhesus monkeys. During and after a 6 hour intravenous infusion of d2-HVA at a constant rate, the levels of both d2-HVA and endogenous HVA in plasma, urine, and CSF were determined by gas chromatography/mass spectrometry, and the relative enrichments of d2-HVA in each of these fluids was calculated. Results indicate that HVA in the urine is derived exclusively from the blood, with no contribution from renal metabolism of dopamine. Less than 1% of HVA in lumbar or ventricular CSF was derived from circulating HVA. The plasma elimination curve of d2-HVA was biexponential, with a terminal phase half life of 44 minutes and an apparent volume of distribution of 0.81 liters/kg. 27 references. (Author abstract)

001109 Elhwuegi, A. Pharmacology Laboratories, Department of Pharmacy, University of Nottingham, England **Antiepileptic drugs and monoamine metabolism in the brain.** British Journal of PHamacology (London). 64(3):407P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of antiepileptic drugs on monoamine metabolism in rat brain are reported. Single intraperitonal doses of phenobarbitone (100/mg/kg), diphenylhydantoin (75mg/kg), carbamazepine (50mg/kg), and sodium bromide (lg/kg) had no effect on dopamine (DA) and noradrenaline (NA) contents of rat brain measured 30 minutes and 1 hour later. Twice daily doses of the same drugs for 4 weeks also failed to influence brain DA and NA. However, when administered simultaneously with alpha-methyl-p-tyrosine (AMPT), phenobarbitone and sodium bromide significantly reduced the extent to which brain DA was depleted by AMPT alone. The amount of DA and NA in the brains of animals withdrawn from phenobarbitone was significantly less than that in brains of habituated and control animals. Single doses of the anticonvulsant drugs did not affect the 5-hydroxytryptamine (5-HT) content of the brain and only diphenylhydantoin significantly increased the amount of 5-hydroxyindoleacetic acid (5-HIAA) in brain. Phenobarbitone significantly reduced the rate at which the concentration of 5-HT rose in brains of rats given pargyline, whereas carbamazepine and diphenylhydantoin reduced the extent to which the 5-HIAA was depleted by pargyline. (Author abstract modified)

001110 Engberg, I.; Flatman, J. A.; Lambert J. D. C. Institute of Physiology, University of Aarhus, DK 8000, Aarhus C, Denmark **The action of N-methyl-D-aspartic and kainic acids on motoneurones with emphasis on conductance changes.** British Journal of Pharmacology (London). 64(3):384P-385P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, membrane conductance (Gm) changes underlying the neuronal responses to excitatory amino acid analogues are described. L-glutamate (1M), L-aspartate (lM), kainate (20mM), N-methyl-D-aspartate (NMDA, 0.2M), and D-homocysteate (0.2M) were applied inonotophoretically to cat lumbar motoneurones. The responses to glutamate and aspartate were very similar, consisting of a rapidly plateauing depolarization with little or no change in Gm with moderate doses. NMDA gave a trianglular shaped response accompanied by a very large decrease in Gm. The dissimilarity of responses to aspartate and NMDA suggests that the two agents may not act on the same receptor. Kainate produced extremely potent and irreversible depolorizations, characterized by slow onset and large Gm increases; these findings suggest that kainic acid may not interact

preferentially with the glutamate receptor. 2 references. (Author abstract modified)

001111 Evans, R. H.; Francis, A. A.; Hunt, K.; Martin, M. R.; Watkins, J. C. Department of Pharmacology, University of Bristol, Medical School, University Walk, Bristol BS8 1TD, England **Quisqualamine, a novel gamma-aminobutyric acid (GABA)-related depressant amino acid.** Journal of Pharmacy and Pharmacology (London). 30(6):364-367, 1978.

Quisqualamine, the decarboxylated analogue of quisqualic acid, predictably depressed electrical activity of neurons of the frog and rat spinal cord in vitro and of the mouse spinal cord in vivo. In the in vitro preparations, the action of quisqualamine was associated with a prolonged depolarization of primary afferent terminals which was sensitive to blockade by picrotoxin and bicuculline and was depressed by strychnine. This suggests an interaction of quisqualamine with presynaptic receptors for both gamma-aminobutyric acid (GABA) and beta-alanine. Postsynaptic actions of quisqualamine, which were less marked than those at presynaptic sites, also appeared to be predominantly GABA mimetic in vitro, but a sensitivity to the GABA antagonist bicuculline could not be demonstrated in vivo. 15 references. (Author abstract)

001112 Evans, R. H.; Watkins, J. C. Department of Pharmacology, The Medical School, University of Bristol, Bristol BS8 1TD, England **Do primary afferent terminals have acidic amino acid receptors?** British Journal of Pharmacology (London). 64(3):385P-386P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the possibility that dorsal root depolarizations produced by acidic amino acids are generate indirectly via release of a depolarizing substance such as potassium or a transmitter into extracellular space, rather than directly by presynaptic receptors for the acidic amino acids is discussed. Studies in hemisected spinal cords from rat and frog suggest that presynaptic terminals desensitive to the excitant N-methyl-D-aspartate (NMDA) and only partially to kainate or that these terminals have kainate receptors but not NMDA receptors. If the latter possibility is correct, the depolarizations evoked by NMDA and similar excitants must be caused indirectly via the release of another substance into the extracellular space. 1 reference. (Author abstract modified)

001113 Fadda, F.; Argiolas, A.; Melis, M. R.; Tissari, A. H.; Onali, P. L.; Gessa, G. L. Institute of Physiology, University of Cagliari, I-09100 Cagliari, Italy **Stress-induced increase in 3,4-dihydroxyphenylacetic acid (DOPAC) levels in the cerebral cortex and in N. accumbens: reversal by diazepam.** Life Sciences (Oxford). 23(22):2219-2224, 1978.

The effect of electrical footshock stress on dopamine (DA) and 3,4-dihydroxyphenylacetic acid (DOPAC) levels in the frontal cortex, nucleus accumbens, striatum, substantia nigra, and medial basal hypothalamus was investigated in male Sprague-Dawley rats. The footshock stress altered DA content only in the substantia nigra, in which DA level decreased by about 35% after 20, 60, or 180 minutes of stress. DOPAC levels were increased in the frontal cortex and nucleus accumbens by about 75% and 40%, respectively; no change in DOPAC levels was seen in the other areas. Pretreatment with diazepam, but not with pentobarbital, prevented the stress induced increase in DOPAC levels. 13 references. (Author abstract modified)

001114 Faingold, Carl L. Division of Pharmacology, Dept. of Medical Sciences, Southern Illinois University School of Medicine, P.O. Box 3926, Springfield, IL 62708 **Brainstem reticular formation mechanisms subserving generalized seizures: effects of convulsants and anticonvulsants on sensory-evoked responses.** Progress in Neuro-Psychopharmacology (Oxford). 2(4):401-422, 1978.

In a review of brainstem reticular formation mechanism subserving generalized seizures, the effects of convulsants and anticonvulsants on sensory evoked responses are described. Sensory evoked potentials of the brain are enhanced by a wide variety of convulsant agents, and the amplitude of sensory evoked potentials is reduced by several anticonvulsants. The enhancement of reticular formation sensory evoked potentials occurs with smaller amounts of convulsant than those which enhance responses in other nonprimary sites. The enhancement of reticular formation neuronal responses to sensory stimuli by convulsant agents appears to be one of the mechanisms subserving convulsant induced enhancement of sensory evoked potentials. Although many convulsants have been considered to act primarily by affecting specific neurotransmitters, recent evidence suggests that convulsants may possess a common neuronal effect which may eventually reveal a general pathophysiological brain mechanism subserving generalized seizure development. 140 references. (Author abstract modified)

001115 Fernando, John C. R.; Curzon, Gerald. Department of Neurochemistry, Institute of Neurology, Queen Square, London, WC1N 3BG, England **Effect of d-amphetamine on tryptophan and other aromatic amino acids in brain.** European Journal of Pharmacology (Amsterdam). 49(4):339-349, 1978.

The effect of amphetamine on brain tryptophan concentrations was investigated in male Sprague-Dawley rats. Amphetamine induced an elevation of brain tryptophan, which was not associated with changes in the plasma concentration of nonesterified fatty acids or free tryptophan. Both alpha-adrenergic and beta-adrenergic blocking drugs opposed the changes in brain. After pretreatment with phentolamine, amphetamine decreased the plasma concentrations of tryptophan, tyrosine, and phenylalanine, and brain/plasma concentration ratios for these three aromatic amino acids rose. Propranolol and pimozide opposed these increases in brain/plasma concentration ratios. The increased brain/plasma ratios resulting from amphetamine administration were associated with hyperthermia. Propranolol, pimozide, and streptozotocin opposed changes in both plasma and brain, but phentolamine affected neither. Despite the increase in brain tryptophan caused by amphetamine, the drug had relatively little concurrent effect on 5-hydroxytryptamine synthesis. Experiments with adrenergic blockers suggest that the small rise in plasma insulin produced by amphetamine probably was the result of hyperthermia rather than brain changes. 43 references. (Author abstract modified)

001116 Feuerstein, Giora; Krausz, Michael; Gutman, Y. Dept. of Pharmacology, Hebrew University-Hadassah Medical School, Jerusalem, Israel **Effect of indomethacin on water intake of the rat.** Pharmacology Biochemistry and Behavior. 9(6):893-894, 1978.

The effects of a systematically administered prostaglandins synthesis inhibitor -- indomethacin (IND) -- on water consumption in the rat were investigated. IND stimulated water intake in intact rats and in bilaterally ureteral ligated rats, but these effects were totally abolished after bilateral nephrectomy. It is suggested that the stimulatory effect of IND on water consumption is mediated by a renal factor. 14 references. (Author abstract modified)

001117 Fludder, Joan M.; Leonard, B. E. MRC Toxicology Unit, Woodmansterne Road, Carshalton, Surrey SM5 4EF, England **The action of the antidepressant drug mianserin on pre-**

synaptic alpha-adrenergic receptors in the rat brain in vivo. Neuropharmacology (Oxford). 17(12):1058-1060, 1978.

In a paper presented at the meeting of the British Association for Psychopharmacology held at the University of Wales Institute of Science and Technology in Cardiff, July 1978, the actions of the antidepressant drug mianserin on presynaptic alpha-adrenergic receptors in male Wistar rat brain are reported. Experiments with the presynaptic alpha-receptor blocking drug yohimbine and the presynaptic alpha-receptor agonist clonidine indicate that stimulation of presynaptic alpha-receptors reduces noradrenaline release, whereas blockade of the receptors stimulates noradrenaline release in brain. In a second experiment, the rise in the concentration of normetanephrine in the amygdala after the alpha-blocker phenoxybenzamine and beta-blocker propranolol was prevented by prior administration of alpha-methyl-p-tyrosine; the effects of yohimbine and clonidine in increasing and decreasing, respectively, the concentrations of normetanephrine were unaffected. In a third experiment, mianserin reversed the decrease in the normetanephrine induced in the amygdala by clonidine; the effect of amitriptyline was only slightly altered by clonidine pretreatment. Results suggest that amitriptyline acts primarily as an amine reuptake inhibitor, whereas mianserin acts by blocking presynaptic alpha-receptors. 7 references.

001118 Fox, P. C.; Dray, A. Department of Physiology, Duke University Medical Center, Durham, NC 27710 **Iontophoresis of LSD: effects on responses of single cortical neurones to visual stimulation.** Brain Research (Amsterdam). 161(1):167-172, 1979.

The effects of microiontophoretic application of lysergic acid diethylamide (LSD) and structurally related analogues onto the visual cortical neurons of anesthetized cats were investigated. The local administration of LSD onto visual cortical neurons produced variable effects on their responses to visual stimulation. Enhancement or reduction of evoked activity appeared to be related to the amount of LSD administered, rather than to neuron type (simple or complex); administration of low doses of LSD produced enhancement more often than depression. None of the hypercomplex cells were enhanced by LSD. Repeated administration of LSD onto the same neurons often produced a smaller effect; reduced responsiveness was observed for both enhancement and depression induced by LSD. Relatively large doses of methysergide, a hallucinogen when administered in high systemic doses, mimicked some of the effects of LSD; 2-bromo-LSD, an inactive analogue of LSD, had no such effects. Results suggest that the effects of LSD on visual cortical neurons are related to its hallucinogenic properties. 20 references.

001119 French, Edward D.; Vasquez, S. A.; George, Robert. A. V. Davis Center, Salk Institute, P. O. Box 1809, San Diego, CA 92112 **Potentiation of morphine hyperthermia in cats by pimozide and fluoxetine hydrochloride.** European Journal of Pharmacology (Amsterdam). 48(4):351-356, 1978.

The effects of pimozide (0.5mg/kg), a dopamine (DA) receptor blocker, and fluoxetine hydrochloride (10mg/kg), a 5-hydroxytryptamine (5-HT) uptake inhibitor, on morphine hyperthermia were investigated in cats. When administered 2-3 hours prior to morphine (1-4mg/kg) injection, both pimozide and fluoxetine enhanced the hyperthermic response to morphine. These results indicate that a balance in the ratio of 5-HT/DA may be involved in cat thermoregulation. 24 references. (Author abstract modified)

001120 Friedhoff, Arnold J.; Rosengarten, Helen; Bonnet, Kenneth. Milhauser Laboratories of the Dept. of Psychiatry, New York University School of Medicine, New York, NY **Receptor-cell sensitivity modification (RSM) as a model for pathogenesis and treatment of tardive dyskinesia.** Psychopharmacology Bulletin. 14(4):77-79, 1978.

In a paper presented at the session on basic issues in tardive dyskinesia, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, a series of studies investigating receptor cell sensitivity modification (RSM) as a model for pathogenesis and treatment of tardive dyskinesia is described. It is noted that the ability to reverse the manifestations of supersensitivity of dopamine receptors by treatment with sinemet may have potential as a treatment for tardive dyskinesia. 7 references.

001121 Friedman, Eitan; Lambert, Geoffrey, A.; Buchweitz, Ellen. Neuropsychopharmacology Research Unit, Department of Psychiatry, New York University Medical Center, 550 First Avenue, New York, NY 10016 **2,5-Dimethoxy-4-methylamphetamine (DOM) -- a central component of its cardiovascular effects in rats; involvement of serotonin.** European Journal of Pharmacology (Amsterdam). 49(2):157-161, 1978.

The hallucinogen 2,5-dimethoxy-4-methylamphetamine (DOM) produced a rise in blood pressure and heart rate when injected into the cerebral ventricles of anesthetized male Sprague-Dawley rats. These effects were abolished in rats with transected spinal cords but were unaffected by prior treatment with hexamethonium. Central but not peripheral administration of the 5-hydroxytryptamine (5-HT) antogonist bromlysergic acid diethylamide tartrate reduced the response. Tachyphylaxis to the response developed rapidly and was accompanied by a decrease in the ability of 5-HT to induce a centrally mediated cardiovascular change. It is concluded that the response is mediated by direct stimulation of central 5-HT receptors. Tachyphylaxis may be the result of irreversible binding of DOM to 5-HT receptors or to 5-HT receptor desensitization. 17 references. (Author abstract)

001122 Fujita, Norihisa; Saito, Kihachi; Yonehara, Norifumi; Yoshida, Hiroshi. Dept. of Pharmacology 1, Osaka University Medical School, Nakanoshima 4-3-57, Kitaku, Osaka 530, Japan **Lisuride inhibits 3H-spiroperidol binding to membranes isolated from striatum.** Neuropharmacology (Oxford). 17(12):1089-1091, 1978.

The inhibitory effect of lisuride hydrogen maleate on tritiated spiroperidol binding to male Sprague-Dawley rat striatal membranes was compared with that of dopamine, apomorphine, spiroperidol, and haloperidol. The inhibotor association constant values for lisuride, apomorphine, dopamine, spiroperidol, and haloperidol were 2.2, 370, 22,000, 0.55, and 6.5nM, respectively. Thus, lisuride is 160 times more potent than apomorphine in inhibiting tritiated spiroperidol binding to striatal membranes. 12 references. (Author abstract)

001123 Fuller, R. W.; Perry, K. W. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **Effect of uptake inhibitors on the depletion of brain norepinephrine and serotonin after alpha-methyl-m-tyrosine administration to rats.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 234(2):229-235, 1978.

The depletion of brain norepinephrine after alpha-methyl-m-tyrosine injection into male rats was antagonized but not completely prevented by pretreatment with the uptake inhibitors protriptyline and chlorimipramine. Administration of protriptyline after the alpha-methyl-m-tyrosine injection partially reversed the depletion norepinephrine serotonin depletion after alpha-methyl-m-tyrosine was not altered by pretreatment with fluoxetine, an inhibitor of uptake into serotonin neurons. Results suggest that part of the norepinephrine (but not serotonin) depletion occurring after alpha- methyl-m-tyrosine injection is due

to the action of amine products that enter the norepinephrine neuron via the membrane uptake pump and whose presence within the nerve terminal is maintained by the uptake pump. 18 references. (Author abstract modified)

001124 Fuller, Ray W.; Snoddy, Harold D. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **Effects of pre- and post-treatment with EXP 561 on the amine-depleting effects of p-chloroamphetamine and 6-hydroxydopamine in rats.** Research Communications in Chemical Pathology and Pharmacology. 21(3):457-465, 1978.

EXP-561, 4-phenyl-bicyclo(2,2,2)octa-1-amine hydrochloride monohydrate, antagonized brain serotonin depletion by p-chloroamphetamine (PCA) and heart norepinephrine depletion by 6-hydroxydopamine (6-OHDA) in rats. The antagonism of PCA action occurred with posttreatment as well as pretreatment with EXP-561. Simultaneous injection of EXP-561 with PCA initially antagonized serotonin depletion, but the effect diminished by 24 hours. The antagonism of 6-OHDA action could be produced only by pretreatment with EXP-561; posttreatment had no effect. When EXP-561 was injected simultaneously with 6-OHDA, its antagonistic effect did not decline with time. The implications of these findings for the interpretation of data on uptake inhibitor antagonism of amine depletors are discussed. 14 references. (Author abstract modified)

001125 Fuller, Ray W.; Snoddy, Harold D.; Wong, David T.; Bymaster, Frank P. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **Studies on mazindol as an amine uptake inhibitor.** Communications in Psychopharmacology. 2(3):223-229, 1978.

Evidence is presented that mazindol, an anorexic drug, inhibits norepinephrine and dopamine uptake more effectively than it inhibits serotonin uptake by brain synaptosomes in vitro. Mazindol was a potent antagonist of norepinephrine depletion by 6-hydroxydopamine in mouse heart in vivo but did not antagonize brain serotonin depletion by p-chloroamphetamine in mice. In rats, two sequential injections of mazindol prevented brain serotonin depletion by p-chloramphetamine, but a single injection had only a partial and short-term effect. 17 references. (Author abstract)

001126 Gallager, Dorothy W. Room 2N315, Section on Biochemistry and Pharmacology, Biological Psychiatry Branch, NIMH, 9000 Rockville Pike, Bethesda, MD 20014 **Benzodiazepines: potentiation of a GABA inhibitory response in the dorsal raphe nucleus.** European Journal of Pharmacology (Amsterdam). 49(2):133-143, 1978.

Alterations in the firing rate of dorsal raphe nucleus (DR) neurons following the administration of benzodiazepines (BZs) were evaluated to determine whether they were the result of a direct interaction with 5-hydroxytryptamine (5-HT) receptors or due to interactions of these drugs with gamma-aminobutyric acid (GABA) or glycine. The effects of BZs after both direct and systemic application were tested in male Sprague-Dawley rats, using microiontophoretic and single cell recording techniques. Although the BZs did not alter the spontaneous firing rate of the DR, both systemic and iontophoretic administration of these drugs resulted in potentiation of the inhibitory responses produced by GABA. The data suggest that this potentiation is mediated post synaptically. Since the effects of BZs on spontaneous activity of the DR were apparent only following pretreatments with amino-oxyacetic acid hemihydrochloride, it is speculated that these drugs may only have pronounced effects when GABA mediated input is prominent. 49 references. (Author abstract)

001127 Gallager, Dorothy W.; Tallman, John F. Biological Psychiatry Branch, NIMH, 9000 Rockville Pike, Bethesda, MD 20014 **Interaction of diphenylhydantoin and benzodiazepines in the CNS. (Unpublished paper).** Bethesda, MD, NIMH, 1978. 17 p.

Possible interactions between diphenylhydantoin (DPH) and the gamma-aminobutyric acid (GABA) and benzodiazepine systems in rat brain, using extracellular unit recording and microiontophoretic techniques, were investigated. Anticonvulsant DPH was found to increase the physiological efficacy of the benzodiazepines. This increased biological effect could be correlated with an enhanced specific binding of benzodiazepines measured in vivo following pretreatment of rats with DPH. The increased binding of benzodiazepines was due to an increase in the affinity of the brain specific benzodiazepine receptor for its ligand. A series of convulsant and anticonvulsant compounds alter the benzodiazepine binding site, suggesting that the benzodiazepine binding site may be relevant to convulsant/anticonvulsant activity. 23 references. (Author abstract modified)

001128 Galli, A.; Zilletti, L.; Scotton, M.; Adembri, G.; Giotti, A. Institute of Pharmacology and Toxicology, University of Florence, Viale G. B. Morgagni, 65, 50134 Florence, Italy **Inhibition of Na-independent (3H)GABA binding to synaptic membranes of rat brain by beta-substituted GABA derivatives.** Journal of Neurochemistry (Oxford). 32(3):1123-1125, 1979.

The relative potencies of a series of beta substituted gamma-aminobutyric acid (GABA) derivatives in inhibiting (3H)GABA binding in synaptic membranes of rat brain were determined. Results indicate that the ability of GABA to displace sodium independent (3H)GABA binding to synaptic membranes is strongly reduced by beta substitution. This effect appears to be correlated primarily with the steric hindrance of the introduced group, since substituents with increasing sizes augment the median inhibitory concentration values of the corresponding GABA derivatives, independently of their effect electronegatives. Steric hindrance of substituents on the beta carbon atom of GABA does not appear to influence the molecular conformation of the gamma-amino-acid moiety as much as it directly affects interaction with the receptor site. 30 references.

001129 Galvan, M.; Bruggencate, G. Ten; Senekowitsch, R. Institute of Physiology, University of Munich, D-8000 Munich 2, Germany **The effects of neuronal stimulation and ouabain upon extracellular K and Ca2 levels in rat isolated sympathetic ganglia.** Brain Research (Amsterdam). 160(3):544-548, 1979.

The effects of neuronal stimulation and ouabain on extracellular potassium ion activity (aK) and extracellular calcium ion activity (aCa) were determined in rat isolated sympathetic ganglia, using ion selective microelectrodes. Orthodromic stimulation produced a rise in aK and a fall in aCa. Addition of 300mcmol/l ouabain caused a small rise in resting aK and reduced the stimulus evoked rises in aK and falls in aCa. Ouabain also doubled the aK recovery time following cessation of stimulation, indicating that the usual fast recovery of aK following stimulation is a consequence of rapid sodium pump activity clearing extracellular potassium ions. 10 references.

001130 Gamse, R.; Mroz, E.; Leeman, S.; Lembeck, F. Institut fur experimentelle und klinische Pharmakologie, Universitatsplatz 4, A-8010 Graz, Austria **The intestine as source of immunoreactive substance P in plasma of the cat.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 305(1):17-21, 1978.

Substance P was measured in acid acetone extracted plasma of cats using a sensitive radioimmunoassay, and the origin of substance P in the intestine of the cat was investigated. The immunoreactive material was submitted to ion exchange chromato-

grapy and at least 90% of immunoreactivity cochromatographed with synthetic substance P. Both evisceration of the cats and ligation of intestinal blood vessels led to a fall in substance P values. 23 references. (Author abstract modified)

001131 Garau, L.; Govoni, S.; Stefanini, E.; Trabucchi, M.; Spano, P. F. Institute of Pharmacology, University of Cagliari, Cagliari, Italy **Dopamine receptors: pharmacological and anatomical evidences indicate that two distinct dopamine receptor populations are present in rat striatum.** Life Sciences (Oxford). 23(17/18):1745-1750, 1978.

At the symposium, ""Receptors of Dopamine Antagonists: New Biochemical Approaches," held in Beerse, Belgium, July 1978, a paper dealing with pharmacological and anatomical evidence for the existence of two distinct dopamine (DA) receptor populations in rat striatum was presented. Studies of (3H)haloperidol and (3H)spiroperidol binding after kainate injection into the striatum of male Sprague-Dawley rats indicate the presence of DA receptive sites not located on postsynaptic membranes. The majority of these DA receptors, which were not associated to an adenylate cyclase, appeared to be localized on terminals of corticostriatal neurons. Sulpiride, an antipsychotic drug that increases striatal DA synthesis, did not inhibit DA stimulated adenylate cyclase in vitro or in vivo. However, sulpiride stereospecifically displaced (3H)haloperidol from striatal binding sites. 30 references. (Author abstract modified)

001132 Gent, J. P.; Normanton, J. R. Department of Pharmacology, University of Leeds, England **Actions of gamma-acetylenic GABA on single central neurones in rat.** British Journal of Pharmacology (London). 64(3):383P-384P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the responses of gamma-aminobutyric acid (GABA) sensitive cells in the medullary reticular formation and the nucleus accumbens of urethane anesthetized rats to iontophoretic application of gamma-acetylenic GABA (GAG) are reported. GAG, a potent enzyme activated irreversible inhibitor of GABA transaminase, reduced the firing of about 25% of the cells studied; this effect was rapid in onset and its time course was similar to that of the ejection current. In a slightly larger proportion of neurons, GAG reversible and competitively antagonized the actions of GABA. The depression of neuronal firing rate by GAG may contribute to the anticonvulsant effects previously attributed solely to the established action of GABA transaminase inhibition. The behavioral excitation seen at high dose levels may reflect GABA antagonism at the single cell level. 3 references. (Author abstract modified)

001133 Georgiev, V. P.; Doda, M.; Gyorgy, L. Dept. of Pharmacology, Institute of Physiology, Bulgarian Academy of Sciences, 1113 Sofia, Bulgaria **The effects of intraventricularly administered GABA and picrotoxin and their interactions on somato-vegetative reflexes in cats.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 231(1):139-147, 1978.

The effects of intraventricularly (third, fourth, and lateral cerebral ventricles) applied gamma-aminobutyric acid (GABA) and picrotoxin on blood pressure and reflexogenic hypertension and nictitating membrane contractions after central sciatic nerve stimulation were studied in lightly anesthetized cats. The interactions between both substances were also studied. Picrotoxin caused a strong elevation of blood pressure and a long lasting contraction of the nictitating membrane when infused into each part of the cerebral ventricular system. These effects of picrotoxin were antagonized by GABA. GABA inhibited the reflexogenic hypertension when given into the fourth ventricle and the reflexogenic nictitating membrane contractions given into the third and fourth ventricles. Picrotoxin anatagonized the inhibitory effects of GABA on the reflexogenic nictitating membrane contractors. It is concluded that the GABA-ergic transmitter system takes part in the central regulation of some somato-vegetative reflexes. 18 references. (Author abstract)

001134 Georgiev, V. P.; Doda, M.; Gyorgy, L. Dept. of Pharmacology, Institute of Physiology, Bulgarian Academy of Sciences, Sofia 1113, Bulgaria **Influence of intraventricularly applied apomorphine on somato-vegetative reflexes in cats.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 231(1):131-138, 1978.

The effects of intraventricularly given apomorphine were studied in lightly anesthetized cats to obtain information about the dopaminergic neurotransmission processes taking part in the somato-vegetative reflexes. The level of blood pressure and the reflexogenic hypertension due to central sciatic nerve stimulation were not changed when apomorphine was applied into the lateral and third but was inhibited when given into the fourth ventricle. The nictitating membrane contractions elicited by sciatic nerve stimulation were inhibited by apomorphine when introduced into each part of the ventricular system. The inhibitory dopaminergic synapses located in the structures lining the walls of the brain ventricular system reached by apomorphine appear to be involved in the central control of somato-vegetative reflexes. 21 references. (Author abstract)

001135 Gescher, A.; Li Wan Po, A. Department of Pharmacy, University of Aston, Gosta Green, Birmingham B4 7ET, England **Correlation of physicochemical properties with absorption and metabolism of some tricyclic drugs.** Journal of Pharmacy and Pharmacology (London). 30(6):353-358, 1978.

Octanol and dodecane partition coefficients, surface activity, and adsorbability to activated charcoal were determined for six tricyclic psychotropic drugs with N-dimethylalkyl side chains (imipramine, amitriptyline, doxepine, promazine, promethazine, and chlorpromazine). Surface activity correlated well with the partition coefficients, and all drugs obeyed the Langmuir adsorption isotherm. A correlation between the reciprocal of the death time of goldfish exposed to drugs and partition coefficients was observed. The extent to which the drugs were N-demethylated, as measured by formaldehyde formed in rat liver homogenates, correlated with their adsorbability to activated charcoal, but not with their ability to inhibit aniline-p-hydroxylase. There was no linear correspondence between N-demethylation and drug lipophilicity as indicated by partition coefficients or surface activity. 25 references. (Author abstract modified)

001136 Gibson, A.; Ginsburg, M.; Hall, M.; Hart, S. L. Department of Pharmacology, Chelsea College, University of London, London SW3 6LX, England **The effects of opiate receptor agonists and antagonists on the stress-induced secretion of corticosterone in mice.** British Journal of Pharmacology (London). 65(1):139-146, 1979.

Intraperitoneal administration of normorphine, morphine, or naloxone or exposure to ether stress for 1 minute elevated plasma corticosteroid concentrations in male LACA mice. Injection of saline or exposure to ether vapor rendered mice less sensitive to a subsequent exposure to ether vapor 15 minutes later. Treatment with normorphine (50mg/kg) potentiated the corticosteroid response to ether stress, whereas pentazocine (20mg/kg), naltrexone (10mg/kg), morphine (24mg/kg), levorphanol (20mg/kg), and naloxone (50mg/kg) prevented the stress-induced elevation of plasma corticosteroids. Both naloxone and morphine inhibited potentiation by normorphine of the response to ether. It is concluded the endogenous opioid pep-

tides may be involved in the control of the response to ether stress in mice. 25 references. (Author abstract modified)

001137 Gladue, Brian A.; Dohanich, Gary P.; Clemens, Lynwood G. Dept. of Zoology, Michigan State University, East Lansing, MI 48824 **Hormonally mediated lordosis in female rats: actions of flutamide and an aromatization inhibitor.** Pharmacology Biochemistry and Behavior. 9(6):827-832, 1978.

The effects of the aromatization inhibitor 1,4,6-androstatriene-3,17-dione (ATD) on androgen and estrogen induced lordosis in the female rat were investigated and compared with the nonsteroidal antiandrogen flutamide (SCH) on hormone induced lordosis. Agents which interfere with androgen metabolism or receptor binding diminished androgen induced, but not estrogen induced lordotic behavior in female rats. SCH reduced the amount of lordosis displayed by female receiving testosterone propionate (TP) plus progesterone (P). SCH did not affect the lordotic behavior of animals receiving estradiol benzoate plus P. Similarly, ATD blocked TP plus P induced lordosis but failed to alter estradiol benzoate plus P induced lordosis. These results suggest that androgen induced lordosis occurs after the testosterone molecule becomes bound to a receptor and is enzymatically converted to estrogenic metabolites. 34 references. (Author abstract modified)

001138 Goldberg, Mark A.; Todoroff, Theodore. Department of Neurology, Harbor General Hospital Campus, UCLA, Torrance, CA 90509 **d-Amphetamine binding to brain lipid.** Neurochemical Research. 3(6):763-773, 1978.

The interaction of d-amphetamine with several bovine brain tissue components was investigated. A hexane buffer partition coefficient technique revealed that a brain lipid extract and a number of individual phospholipids bind to d-amphetamine. Phosphatidylserine showed the greatest binding, and phosphatidylethanolamine and dipalmitoyllecithin were also effective. Phospholipid binding of d-amphetamine was related to fatty acid composition. Cholesterol and ganglioside did not bind to d-amphetamine. It is suggested that phospholipid binding of d-amphetamine may play a role in the pharmacological action of the drug. 26 references. (Author abstract modified)

001139 Graeff, F. G.; Filho, N. G. Silveira. Department of Pharmacology, Medical School, 14.100 Ribeirao Preto, Sao Paulo, Brazil **Behavioral inhibition induced by electrical stimulation of the median raphe nucleus of the rat.** Physiology & Behavior. 21(4):477-484, 1978.

Male Wistar rats implanted with brain electrodes in the median raphe (NMR) were trained to lever-press under a variable-interval (VI) 1 minute schedule of water presentation. At variable time intervals averaging 7 minutes, periods of 90 seconds of brain stimulation were superimposed on VI responding without any exteroceptive stimulus change. Electrical stimulation of the NMR caused suppression of ongoing lever-pressing behavior proportional to the stimulus intensity. NMR stimulation also elicited defecation and a cluster of somatic and autonomic changes, such as crouching, micturition, piloerection, and teeth chattering. In four out of six rats, the response suppressant effect of NMR stimulation was counteracted by the 5-hydroxytryptamine (5-HT) synthesis inhibitor, para-chlorophenylalanine (PCPA), 3 to 5 days following administration of a single 500mg/kg dose of the drug. The effect of PCPA tended to disappear after 15 days. Results support the suggestion that the mesolimbic serotonergic pathway originating in the NMR and projecting to the septal area and the hippocampus is a substrate of behavioral inhibition in the rat. 65 references. (Author abstract modified)

001140 Green, A. L.; El Hait, Mayyada, A. S. Department of Biochemistry, University of Strathclyde, Glasgow, G4 ONR, Scotland **Inhibition of mouse brain monoamine oxidase by ()-amphetamine in vivo.** Journal of Pharmacy and Pharmacology (London). 30(4):262-263, 1978.

()-Amphetamine was demonstrated to reduce the level of brain monoamine oxidase inhibition produced by phenelzine in vivo in mouse brain. The measured brain monoamine oxidase activity of mice treated with 2 or 5 mg/kg of ()- amphetamine sulphate after doses of phenelzine were compared with saline treated controls. Monoamine oxidase activity was about the same for both ()-amphetamine and saline treated mice before treatment with phenelzine but those mice pretreated with ()-amphetamine required about twice as much phenelzine to cause a 50% inhibition of monoamine oxidase activity. This suggests that the ()-amphetamine caused about 50% inhibition of brain monoamine oxidase. 19 references.

001141 Greenblatt, David J.; Shader, Richard I. Clinical Pharmacology Unit, Massachusetts General Hospital, Boston, MA 02114 **Parzepam and lorazepam, two new benzodiazepines.** New England Journal of Medicine. 299(24):1342-1344, 1978.

The properties and apparent clinical value of prazepam and lorazepam, two benzodiazepine anxiolytics marketed in the United States in 1977, are assessed. The phramacokinetic properties of each substance are discussed, and the results of clinical studies are examined. Since desmethyldiazepam accounts for the clinical activity of prazepam, this drug probably has no distinct advantage over any other benzodiazepines similarly transformed in part or entirely to desmethyldiazepam. The slow generation of desmethyldiazepam from prazepam may be beneficial for selected patients. Oral lorazepam is an effective anxiolytic, but a consistent clinical advantage of lorazepam over other longer acting benzodiazepines is not established. Parenteral lorazepam shares the cardiovascular safety of injectable chlordiazepoxide and diazepam, and may have clinical advantages over these drugs. Intravenous lorazepam produces effects similar to diazepam but of longer duration. 36 references.

001142 Greenslade, F. C.; Newquist, K. L. Research Laboratories, Ortho Pharmaceutical Corporation, Raritan, NJ 08869 **In vitro measurement of the beta-adrenergic blocking properties of ORF 12592, the 5-hydroxy analog of propranolol.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 233(2):270-280, 1978.

ORF 12592 caused concentration dependent inhibition of isoproterenol stimulated adenylate cyclase activity in sarcolemma enriched membrane preparations of guinea pig myocardium. Its potency was slightly less than that of d,l-propranolol. ORF 12592 did not stimulate basal enzyme activity, suggesting it to be devoid of intrinsic sympathomimetic activity. It produced no marked inhibition of basal activity, nor did it inhibit sodium fluoride stimulated enzyme activity, indicating that the compound acts at the receptor rather than the catalytic site of the beta-adrenergic receptor adenylate cyclase complex. ORF 12592 competed for binding of 3H-dihydroalprenolol to specific beta 1 and beta 2-adrenergic binding sites on turkey and leopard frog erythrocyte membranes, respectively. Concentration binding inhibition curves indicated that ORF 12592 is a nonselective beta-blocker with slightly less affinity for each beta-adrenergic receptor than propranolol. 15 references. (Author abstract)

001143 Griffith, Olwen R.; Marshall, I.; Nasmyth, P. A. Department of Biochemical & Experimental Pharmacology, St. Mary's Hospital Medical School, London W2 1PG, England **Blockade of pre-synaptic alpha-adrenoceptors by metiamide.** British Journal of Pharmacology (London). 64(3):416P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Scoiety at the University of Nottingham, the blockade of presynaptic alpha-adrenoceptors by metiamide is reported. In vasa deferentia from 6-8-week-old mice, clonidine (0.7-44.8nM) inhibited the stimulation evoked twitch response in a dose related manner; the curve was shifted to the right by more than one log unit by 10mcM metiamide, but not by cimetidine (10mcM). Noradrenaline (NA, 0.1-3.0mcM) and ergometrine (0.03-1.0mcM) inhibition of the twitch response was also reduced by metiamide but not by climetidine. Metiamide did not alter the stimulated overflow of (3H)NA from vasa deferentia from 10-13-week-old mice preloaded with (3H)NA, but did antagonize clonidine inhibition of the twitch response and clonidine reduction of (3H)NA overflow in this tissue. Contractions of the vas deferens elicited by NA (0.3-30mcM) and inhibition of twitch responses by morphine (0.03-10mcM) were not affected by metiamide. Results indicate that, in addition to its known antagonism at histamine H2 receptors, metiamide is also an antagonist at presynaptic alpha-adrenoceptors. 6 references. (Author abstract modified)

001144 Groppetti, A.; Parenti, M.; Galli, C. L.; Bugatti, A.; Cattabeni, F.; Di Giulio, A. M.; Racagni, G. Department of Pharmacology, School of Pharmacy and Medicine, University of Milan, Via Andrea Del Sarto 21, Milan, Italy **3-Methoxytyramine and different neuroleptics: dissociation from HVA and DOPAC.** Life Sciences (Oxford). 23(17/18):1763-1768, 1978.

At the symposium, ""Receptors of Dopamine Antagonists: New Biochemical Approaches," held in Beerse, Belgium, July 1978, a paper was presented in which a study of the effects of haloperidol and clozapine on striatal concentrations of 3-methoxytyramine (3-MT) in male Sprague-Dawley rats is described. The results indicate that 3-MT changes parallel the electrophysiological and behavioral profile of the two neuroleptics. Haloperidol and clozapine, given at doses that elicit comparable increases of 3,4-dihydroxyphenylacetic acid and homovanillic acid, differentially affected 3-MT content; 3-MT content was increased by haloperidol but not affected by clozapine. Data obtained after various lesions that differently affected the integrity of striatal or nigral neuronal organization suggest that mechanisms localized in substantia nigra play an important role in the modulation of haloperidol induced increase of striatal 3-MT. 25 references. (Author abstract mdoified)

001145 Grupp, L. A.; Perlanski, E. Department of Pharmacology, University of Toronto, Toronto, Ontario, Canada M58 1A8 **Ethanol-induced changes in the spontaneous activity of single units in the hippocampus of the awake rat: a dose-response study.** Neuropharmacology (Oxford). 18(1):63-70, 1979.

The spontaneous firing rates of single units in the dorsal hippocampus of male Wistar rats were monitored during ethanol challenge. Sixty one units from 27 animals were studied, with seven to ten units tested at each of seven ethanol doses. Results indicate that single cells in the hippocampus are sensitive to ethanol. This sensitivity was reflected in a dose dependent depression of firing rate, with larger doses producing greater degrees of depression. The simultaneously recorded EEG indicated a marked bias in frontal cortical activity toward high amplitude slow waves, whereas hippocampal activity showed less marked but more varied changes. 18 references. (Author abstract modified)

001146 Gudelsky, Gary Allen. Michigan State University **Differential drug effects on dopaminergic neurons of the rat brain. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7803492, HC$15. MF$7.50. 148 p. 1977.

The responses of tuberoinfundibular, nigrostriatal and mesolimbic dopaminergic neurons to a number of pharmacologic agents and endocrinologic manipulations were compared. The results of systemic administration of gamma-butyrolactone and baclofen indicate that regional differences of drug action exist with respect to central dopaminergic neurons, and demonstrate possible hormonal influences on tuberoinfundibular neurons. Haloperidol (0.5mg/kg, intraperitoneally) increased and piribedil (30mg/kg, intraperitoneally) decreased dopamine turnover in the striatum and olfactory tubercle within 2 hours. Dopamine turnover was increased only in the median eminence 16 and 24 hours after a single subcutaneous injection of haloperidol (2.5mg/kg); this effect was blocked by hypophysectomy. Three and five daily injections of estradiol benzoate (25Mg/kg) selectively increased dopamine turnover in the median eminence; this effect also was blocked by hypophysectomy. Hypothalamic deafferentation did not alter the ability of haloperidol to increase dopamine turnover in the median eminence. Thus, whereas the activity of nigrostriatal and mesolimbic dopamine neurons appears to be modulated in part by a rapid neuronal feedback loop, the activity of tuberoinfundibular dopamine neurons appears to be influenced by a sluggish hormonal neuronal feedback mechanism. (Journal abstract modified)

001147 Guidotti, A. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Methods to evaluate in vivo the activity of GABA receptor agonists.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 439-446).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the use of muscimol (5-amino-methyl-3-hydroxyisoxazole) to to evaluate in vivo the activation of central gamma-aminobutyric acid (GABA) receptors was described. Using muscimol as a model molecule for GABA receptor activation, it was found that GABA receptor agonists selectively antagonize convulsions produced by GABA receptor antagonists, but not the convulsion glycine receptor antagonists. Cerebellar cyclic guanosine monophosphate (GMP) content was reduced by GABA receptor agonists injected locally in cerebellum, and systemic administration of GABA receptor agonists blocked the increase of cerebellar cyclic GMP induced by blockers of GABA receptor function. The increase of anterior pituitary cyclic adenosine monophosphate induced by isoniazid and picrotoxin was blocked by muscimol, but muscimol failed to block the increase induced by reserpine. Pargyline blocked the effects of reserpine but not those of isoniazid. 25 references. (Author abstract modified)

001148 Guidotti, A.; Baraldi, M; Schwartz, J. P.; Toffano, G; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, St. Elizabeths Hospital, Washington, DC 20032 **A molecular mechanism for the action of benzodiazepines on GABAergic transmission. (Unpublished paper)** Washington, DC, NIMH, 1978. 8 p.

Biochemical studies on the properties of receptor proteins involved in the recognition of gamma-aminobutyric acid (GABA) are summarized and it is demonstrated how benzodiazepines (BZD) have been used as a tool to probe the molecular mechanisms that participate in the supramolecular function of the GABA receptors. Present knowledge shows that B an endogenous modulator of GABA receptors thereby revealing the function of high affinity GABA recognition sites. From this evidence, it is inferred that BZDs facilitate GABAergic transmission by increasing the receptor responsiveness to transsynaptically released GABA. 18 references.

001149 Guidotti, A.; Biggio, G.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Action of diazepam, haloperidol, morphine and**

muscimol on the cGMP content of cerebellum. In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 917-924).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the action of diazepam, haloperidol, morphine, and muscimol on the cyclic guanosine monophosphate (GMP) content of the cerebellum was reviewed. All four agents decrease cyclic GMP content in rat cerebellum, but apparently through different mechanisms. Muscimol and diazepam lower the cerebellar cyclic GMP content when injected systemically or into the cerebellum but not when injected into the striatum. Haloperidol and morphine act after intrastriatal but not after intracerebellar injection. The effect of haloperidol is specifically blocked by apomorphine, while the effect of morphine is blocked by naltrexone. The increase in cerebellar cyclic GMP content induced by intercerebellar isoniazid is blocked only by diazepam and muscimol. These findings led to the conclusion that diazepam activates gamma-aminobutyric acid receptors. 29 references. (Author abstract modified)

001150 Ha, Hongchien; Wu, Rocky S.; Contreras, Roberto A.; Tan, En-Chow. Pain Research Laboratory, Acupuncture Research Center, China Medical College, Taichung, Taiwan 400, R.O.C. **Measurement of pain threshold by electrical stimulation of tooth pulp afferents in the monkey.** Experimental Neurology. 61(2):260-269, 1978.

A quantitative method for measuring pain thresholds by electrical stimulation of the tooth pulp in the alert, awake monkey, is described. This method proved to be a valid test in pain studies in Macaca cyclopis Swinhoe monkeys. Morphine, meperidine, and sodium pentobarbital all produced marked increased in pain threshold levels. The elevation of pain thresholds by acupuncture was also significant. 30 references. (Author abstract modified)

001151 Haimann, Claudia; Margnelli, Marco; Sotgiu, Maria Luisa. Laboratorio di Fisiologia dei Centri Nervosi-CNR, Via Mario Bianco 9, I-20131 Milano, Italy. **Variability of peripheral representation in ventrobasal thalamic nuclei of the cat: effects of chloralose treatment.** Experimental Neurology. 60(3):469-483, 1978.

The effects of the intravenous administration of alpha-chloralose on the static and dynamic properties of 20 highly specific somatosensory neurons isolated within the forepaw focus of the thalamic ventralis posterolateralis (VPL) nucleus of locally anesthetized cats were studied. In these neurons, chloralose did not produce the aspecific properties previously observed in portions of cell populations sampled from the VPL nucleus of cats anesthetized with chloralose or subjected to surgical interventions to lower the amount of ascending or corticofugal influx to the thalamus. After chloralose, eight units (including six thalamocortical relay cells) showed continuous or discontinuous enlargements of their peripheral receptive fields. Findings are tentatively explained in terms of the unmasking of a convergent specific input, directed only to a fraction of thalamocortical relay cells and normally blocked by afferent or corticofugal inhibition. It is suggested that the unmasked input could be mediated by the spinocervicothalamic pathway. 35 references. (Author abstract modified)

001152 Hammerstad, J. P.; Cawthon, M. L.; Lytle, C. R. Department of Neurology, University of Oregon Health Sciences Center, Portland, OR 97201 **Release of (3H)GABA from in vitro preparations: comparison of the effect of DABA and beta-alanine on the K and protoveratrine stimulated release of (3H)GABA from brain slices and synaptosomes.** Journal of Neurochemistry (Oxford). 32(1):195-202, 1979.

The effect of the heteroexchange with DABA and beta-alanine on K stimulated Ca2-dependent release of (3H)GABA from synaptosomes using cortical slices from rat brain was examined. A continuous superfusion system employing a Ca2 pulse to produce a calcium coupled release was used to study the effect of two concentrations of DABA and beta-alanine. In contrast to the results in slices, DABA at both concentrations had no effect on the release of (3H)GABA from synaptosomes in spite of evidence that exchange diffusion was occurring. With protoveratrine as the releasing agent there was no effect of DABA on the release of (3H)GABA from either slices or synaptosomes. The results suggest that the major portion of (3H)GABA released from cortical slices by high K comes from a nontransmitter pool in the neuron. It is concluded that the use of K stimulated release of amino acids from cortical slices as a criterion for neurotransmitter function should be viewed with caution. 27 references. (Author abstract modified)

001153 Harris, Jane E. Department of Pharmacology, Emory University, Atlanta, GA 30322 **Beta-adrenergic receptor-sensitive adenosine cyclic 3',5'-monophosphate accumulation in homogenates of the rat corpus striatum.** Biochemical Pharmacology (Oxford). 27(24):2919-2925, 1978.

The conversion of newly formed tritiated adenosine triphosphate (ATP) to tritiated adenosine cyclic 3',5'-monophosphate (cAMP) was studied in osmotically shocked, crude synaptosomal fractions of the male Sprague-Dawley rat corpus striatum. Studies with the beta-hydroxylated catecholamines isoproterenol and norepinephrine, the non-beta-hydroxylated catecholamines N-isopropyldopamine and dopamine, and the beta-adrenergic antagonist isoproterenol indicate that the particulate component of adenylate cyclase, which uses exogenous ATP as substrate, has properties characteristic of a dopamine receptor coupled adenylate cyclase. In contrast, the membrane enclosed, particulate component of adenylate cyclase, which uses endogenously synthesized ATP, conformed to criteria identified with a beta-adrenoreceptor linked adenylate cyclase. 27 references. (Author abstract modified)

001154 Harris, R. Adron; Krause, William; Goh, Edward; Case, Jeffrey. Department of Pharmacology and Anatomy, University of Missouri School of Medicine, Columbia, MO **Behavioral and biochemical effects of chronic consumption of ethanol by hamsters.** Pharmacology Biochemistry and Behavior. 10(3):343-347, 1979.

The effects of chronic ethanol consumption on shock avoidance behavior, ethanol sensitivity (tolerance), liver ultrastructure, and liver and serum lipid concentrations were investigated in male Syrian Golden Hamsters. When given a choice between water and ethanol/water solutions, the animals consumed about 90% of their fluid as ethanol/water solution, resulting in a daily intake of about 11g/kg. After 53 days of alcohol ingestion, there was no evidence of tolerance to the soporific effects of parenterally administered ethanol, and removal of the ethanol solutions failed to produce any signs of alcohol withdrawal. However, the acquisition of escape responding from footshock was impaired in animals previously given ethanol, compared to controls. Biochemical and ultrastructural analyses demonstrated that chronic ethanol ingestion increased hepatic glycogen and plasma triglycerides without altering hepatic or plasma concentrations of phospholipids, free cholesterol, or cholesterol esters. Comparison of these findings with biochemical and behavioral effects of ethanol in other species indicates that the hamster has an unusual metabolic response to ethanol. 13 references. (Author abstract modified)

001155 Haubrich, Dean R.; Pflueger, A. Barbara. Neuropsychopharmacology Section, Merck Institute for Therapeutic Research, West Point, PA 19486 **Choline administration: central effect mediated by stimulation of acetylcholine synthesis.** Life Sciences (Oxford). 24(12):1083-1090, 1979.

Oral administration of choline or physostigmine to male Sprague-Dawley rats stimulated the metabolism of dopamine (DA) in brain. Treatment with atropine, an acetylcholine (ACh) receptor blocker, or 4-(1-naphthylvinyl)pyridine, an inhibitor of ACh synthesis, antagonized the choline-induced increase in DA metabolism. In contrast to its effect on the choline-induced increase in DA metabolism, 4-(1-naphthylvinyl)pyridine did not prevent the increase induced by physostigmine. Results indicate that oral administration of choline augments central cholinergic function and suggest that the mechanism involves stimulation of the rate of synthesis and release of ACh. 16 references. (Author abstract modified)

001156 Hedreen, John. Department of Cell Biology and Anatomy, Johns Hopkins University, School of Medicine, Baltimore, MD 21205 **Neuronal degeneration caused by lateral ventricular injection of 6-hydroxydopamine. I. The ventral premammillary nucleus and other cell groups.** Brain Research (Amsterdam). 157(1):129-135, 1978.

Patterns of degenerating cell bodies following the lateral ventricular injection of 6-hydroxydopamine (6-OHDA) in rats were examined using the Fink-Heimer method. After lateral ventricular 6-OHDA injection, degenerating cells were found in the ventral premammillary nucleus and some other hypothalamic regions; the locus coeruleus; groups A4, A5, and A7; the ventral periaqueductal gray region; and the region of catecholamine cell groups A8, A9, and A10. These findings are discussed in relation to previous studies of the effects of 6-OHDA injections in the fourth ventricle. 20 references.

001157 Henwood, R. W.; Boulton, A. A.; Phillis, J. W. Department of Anatomy, University of Texas, Health Science Center, 7703 Floyd Curl Drive, San Antonio, TX 78284 **Iontophoretic studies of some trace amines in the mammalian CNS.** Brain Research (Amsterdam). 164:347-351, 1979.

The response of male Sprague-Dawley rat cortical and caudate neurons to the trace amines p-tyramine, p-octopamine, beta-phenylethylamine, and phenylethanolamine was studied. Iontophoretic application of the trace amines on or near the individually recorded nerve cells resulted in significant depression of the cerebral cortical and caudate neurons. Noradrenaline and dopamine also had a pronounced depressant effect of these neurons. The powerful depressant effects on neuronal firing following application of the trace amines suggests a neuromodulatory role for these substances. 21 references.

001158 Herman, Zbigniew S.; Bonczek, Anna. Department of Pharmacology, Silesian School of Medicine, MARKSA 38, 41-808, Zabrze, Poland **Model of central chemical "serotoninectomy" in mice.** Pharmacology (Basel). 17(1):8-14, 1978.

The effect of 5,7-dihydroxytryptamine (5,7-DHT) and 5,6-dihydroxytryptamine (5,6-DHT) on the level of noradrenaline dopamine (DA), 5-hydroxytryptamine, (5-HT), and 5-hydroxyindoleacetic acid (5-HIAA) in discrete brain areas of male Porton-S mice was studied. The level of free and total acetylcholine in the whole brain was also measured. Results indicate that 5,6-DHT causes a relatively specific short-term decrease of 5-HT and 5-HIAA levels in discrete areas of mouse brain, accompanied by a decrease of DA level in the striatum. It is concluded that 5,6-DHT produced a relatively specific disruption of central 5-HT neurons in mice, whereas 5,7-DHT is an unspecific neurotoxic drug for mouse brain. Neither substance affected the behavior of mice. 25 references. (Author abstract modified)

001159 Hernandez, R. J. Depto. de Neurociencias, Centro de Investigacion del IPN Apartado Postal 14-740, Mexico 14, DF **Na-K-ATPase activity in the brain cortex of rats ontogenetically malnourished, and treated with serotonin precursors.** Brain Research (Amsterdam). 162(2):348-352, 1979.

Sodium and potassium ion stimulated adenosine triphosphatase (Na-K-ATPase) activity in the brain cortex of ontogenetically malnourished rats and in rats treated with serotonin precursors and monoamine oxidase (MAO) inhibitors was investigated. The activity of Na-K-ATPase was significantly increased in the brain cortex of rats that were malnourished during gestation or the early postnatal period; this increase in enzyme activity was evident up to the age of 80 days in malnourished animals. In normal rats, Na-K-ATPase activity in brain cortex was significantly and rapidly increased by injection of pargyline, 5-hydroxytryptophan, or L-tryptophan. Results suggest that serotonergic mechanisms are involved, directly or indirectly, in the alterations in Na-Ka-ATPase seen in malnourished animals. 18 references.

001160 Hexum, Terry D. Department of Pharmacology, University of Nebraska Medical Center, Omaha, NE 68105 **Studies on the reaction catalyzed by transport (Na,K) adenosine triphosphatase -- II. In vitro and in vivo effects of phenoxybenzamine.** Biochemical Pharmacology (Oxford). 27(17):2109-2114, 1978.

The inhibition of sodium (Na)/potassium (K) stimulated adenosine triphosphatase (ATPase) by phenoxybenzamine both in vitro and in vivo in male Sprague-Dawley rats was studied. In vitro, the inhibition of the enzyme was time and temperature dependent; the inhibition was irreversible and was not specifically influenced by incubation in the presence of Na, K, magnesium, adenosine triphosphate, or varying pH. Phenoxybenzamine did not alter the concentration of Na or K required for half maximal activation of the enzyme. Incubation of the enzyme with phenoxybenzamine under conditions where the phosphorylated form of the enzyme existed gave a median inhibitory constant identical to that observed when no phosphoenzyme was formed. Potassium activated p-nitrophenyl phosphatase was inhibited by phenoxybenzamine over the same concentration range as required for inhibition of the Na/K ATPase reaction. Norepinephrine and phentolamine both failed to block the inhibition by phenoxybenzamine in vitro. Ouabain did not alter the sensitivity of the enzyme for phenoxybenzamine. 13 references. (Author abstract modified)

001161 Hieble, Jacob Paul. University of Texas Graduate School of Biomedical Sciences at Galveston **Steric requirements for optimal interaction of drugs with beta adrenergic and dopaminergic receptors. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 77-29456, HC$15. MF$7.50. 185 p. 1977.

The activity of 1-phenoxy, 3-t-butylamino,2-propanol as a beta antagonist was studied, and the effects of ring alkylation on its antagonist potency was evaluated. The possibility of using the isolated rabbit ear artery as an experimental model for quantitiative studies on dopaminergic receptor mechanism was also explored. 1-Phenoxy,3-t-butylamino,2-propanol was found to be an effective antagonist of the effects of isoproterenol, a beta-adrenergic agonist, on the isolated rat atria and isolated rabbit tracheal strip. The differences in dopaminergic activity of the various methylated dopamine derivatives tested could be explained on the basis of preferred molecular conformation. The results with both dopaminergic agonists and antagonists demonstrate the utility of the isolated perfused rabbit ear artery as a

model for studies on dopaminergic receptor mechanisms. (Journal abstract modified)

001162 Ho, T. K.; LaBella, F. S.; Pinsky, C. Dept. of Pharmacology & Therapeutics, University of Manitoba, Winnipeg, Man., Canada R3E OW3 **Opiate properties of SKF 525A.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(4):550-554, 1978.

The opiate properties of SKF 525A, a classical inhibitor of microsomal drug metabolizing enzymes which is structurally similar to the diphenylpropylamine analgesics, were investigated. In an opiate radioreceptor assay, SKF 525A was 50 times less potent than methadone in the absence of sodium and 10 times less potent in the presence of sodium. The nature of the sodium effect indicates SKF 525A to have less opiate agonist character than methadone. In mice, 2mg of SKF 525A given intraperitoneally induced less profound analgesia on a hot plate (44 degrees C) than did 0.1mg of methadone. Analgesia by SKF 525A was prevented by pretreatment of the mice with naloxone. 18 references. (Author abstract modified)

001163 Ho, Walter K. K.; Wen, Hsiang Lai; Lam, Stella; Ma, Lin. Department of Biochemistry, Chinese University of Hong Kong, Shatin, N. T., Hong Kong **The influence of electro-acupuncture on naloxone-induced morphine withdrawal in mice: elevation of brain opiate-like activity.** European Journal of Pharmacology (Amsterdam). 49(2):197-199, 1978.

The effects of acupuncture with electrical stimulation (AES) on naloxone induced morphine withdrawal and whole brain content of opioid peptides were investigated in morphine dependent female WHT mice. Mice treated with AES for 30 minutes prior to the injection of naloxone has a significantly lower score in withdrawal behaviors. When the brains of the animals were analyzed for opiate-like activity at the end of the experiment, the AES treated animals showed a significant increase of opiate like activity in the peak I fraction but not in the peak II fraction. Results indicate that AES is effective in suppressing withdrawal symptoms and that its action may be mediated by increasing the level of opiate like compounds in the brain. Since the opiate like compound eluted in peak I apparently corresponds to beta-endorphin and that in peak II to enkephalin, AES appears to work primarily on the endorphin and not on the enkephalin system. 6 references.

001164 Holt, Thomas M.; Hawkins, R. Keith. Dept. of Anatomy, College of Medicine, University of South Florida, Tampa, FL 33612 **Rat hippocampal norepinephrine response to cholinesterase inhibition.** Research Communications in Chemical Pathology and Pharmacology. 20(2):239-251, 1978.

Thirteen rats were injected with the irreversible organophosphate cholinesterase inhibitor Disulfoton (0-0-diethyl S-2-((ethylthio) ethyl) phosphorodithioate) and then sacrificed after various time intervals so that the levels of hippocampal norepinephrine could be determined. Results indicate that Disulfoton caused a significant decrease (approximately 14%) in hippocampal norepinephrine within 3 hours of exposure. This reduction was maintained for at least 48 hours. Titers of norepinephrine had returned to control levels when measured 5 days after a single drug administration. Chronic poisoning also caused depressed norepinephrine levels, although not significantly below those observed in acutely treated animals. 20 references. (Author abstract)

001165 Hong, J. S.; Yang, H.-Y. T.; Gillin, J. C.; Di Giulio, A. M.; Fratta, W.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, St. Elizabeths Hospital, Washington, DC 20032 **Chronic treatment with haloperidol accelerates the biosynthesis of enkephalins in rat striatum.** Brain Research (Amsterdam). 160(1):192-195, 1979.

To determine the effect of chronic treatment with haloperidol on enkephalin biosynthesis in striatum, the enkephalin content of various brain regions was determined after intraventricular injection of cycloheximide in male Sprague-Dawley rats treated chronically with saline or haloperidol (2mg/kg/day, ip, for 12 days). After cycloheximide, the concentration of striatal met5-enkephalin (ME) and leu5-enkephalin (LE) fell more rapidly in haloperidol treated rats than in controls. It is suggested that the elevation of striatal ME and LE elicited by chronic haloperidol treatment is due to an induction of a rate limiting enzyme that is transsynaptically activated by haloperidol. It is speculated that the blockade of dopaminergic transmission induced by haloperidol may result in an increase in the synthesis and utilization of striatal LE and ME in areas in which LE and ME function as part of the reward system. This mechanism could account for the antipsychotic effects of drugs that block dopaminergic transmission. 7 references.

001166 Hosein, Esau A.; Lapalme, Marc; Sacks, Brian; Wiseman-Distler, Miriam. Department of Biochemistry, McGill University, McIntyre Medical Building, Montreal, Quebec, H3G 1Y6, Canada **Biphasic changes in rat brain mitochondrial membrane structure and enzyme activity after acute opiate administration to rats.** Biochemical Pharmacology (Oxford). 28(1):7-14, 1979.

The effects of an acute dose of morphine (25mg/kg) on mitochondrial membrane structure and enzyme activity were investigated in Sprague-Dawley rats. Biphasic changes in both the activity and activation energy of the membrane bound enzymes were observed,-indicating some type of morphine induced change in the inner membrane of the mitochondria. These changes were entirely dependent on the time of sampling after opiate treatment. Results suggest that alteration of the membrane lipid phase transition may be fundamental to the action of morphine in rat brain mitochondria. 25 references. (Author abstract modified)

001167 House, C. R.; Ginsborg, B. L.; Mitchell, Mary R. Department of Veterinary Physiology, University of Edinburgh, Summerhall, Edinburgh, Scotland **Are dopamine receptors accessible to intracellularly applied agonist?** Nature (London). 275(5681):663, 1978.

The possibility of intracellular activation of receptors by neurotransmitters was studied. Cells of the salivary gland of the cockroach Nauphoeta cinerea were impaled with microelectrodes which contained agonists and which also were used for intracellular recording. Intracellular applications of dopamine were made to about 100 cells, and responses were obtained from about two thirds of these. Two possible explanations for these responses are that 1) receptors are activated intracellularly by the ionophoretically applied agonists or 2) the receptors on the outer membrane surface are activated by agonist which has leaked through the membrane. Attempts to distinguish between these two explanations are described, but with inconclusive results. 5 references.

001168 Howlett, D. R.; Nahorski, S. R. Department of Pharmacology and Therapeutics, Medical Sciences Building, University of Leicester, Leicester, LE1 7RH, England **Acute and chronic amphetamine treatments modulate striatal dopamine receptor binding sites.** Brain Research (Amsterdam). 161(1):173-178, 1979.

Striatal dopamine (DA) receptor activity was assessed in male Wistar rats treated acutely or chronically with d-amphetamine sulfate. 3H)spiroperidol binding was reduced by 35% in rats

given two daily intraperitoneal injections with increasing doses (5, 10, and 15mg/kg) of amphetamine for 20 days. The administration of a single 15mg/kg dose of amphetamine resulted in a small but significant increase in DA receptor binding sites and a significant fall in affinity for the labelled ligand. Adenylate cyclase activity was not influenced by acute or chronic amphetamine treatment. These results are discussed in relation to possible dopaminergic dysfunction in schizophrenia. 24 references.

001169 Howlett, D. R.; Nahorski, S. R. Department of Pharmacology and Therapeutics, Medical Sciences Building, University Road, Leicester LE1 7RH, England **Effect of acute and chronic amphetamine administration on beta-adrenoceptors and dopamine receptors in rat corpus striatum and limbic forebrain.** British Journal of Pharmacology (London). 64(3):411P-412P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of acute and chronic amphetamine administration on beta-adrenoceptors and dopamine (DA) receptors in the corpus striatum and limbic forebrain of male Wistar rats are reported. Following a single large dose of amphetamine, the responsiveness of the cyclic adenosine monophosphate (AMP) generating systems was unchanged in both brain areas, but a significant fall in affinity for (3H) spiperone and a small increase in binding sites were apparent in striatal membranes. In contrast, chronic administration of amphetamine for 4 or 20 days resulted in a large reduction in isoprenaline and DA stimulated cyclic AMP production. The properties of beta-adrenoceptor binding sites were identical to controls at all times in both regions. After 4 days of treatment, a marked increase in (3H)spiperone binding sites in the limbic forebrain was observed, but after 20 days of treatment the striatal sites were significantly reduced. Since there is good evidence that beta-adrenoceptors are directly coupled to adenylate cyclase, the results suggest that the fall in beta-adrenoceptor responsiveness after chronic amphetamine may result from an uncoupling of recognition sites to adenylate cyclase. 3 references. (Author abstract modified)

001170 Huang, J. T.; Lajtha, A. Institute of Neurochemistry, Ward's Island, New York, NY 10035 **The accumulation of (3H)enkephalinamide (2-D-alanine-5-methioninamide) in rat brain tissues.** Neuropharmacology (Oxford). 17(12):1075-1079, 1978.

The accumulation of tritiated 2-D-alanine-5-methionine-enkephalinamide in cerebral cortex slices and isolated choroid plexus of female Sprague-Dawley rats was investigated. The accumulation of enkephalinamide was inhibited by some metabolic inhibitors. The saturable process was stronger in choroid plexus than in cortex. At a concentration of 0.00001M, naloxone and levorphanol decreased enkephalinamide accumulation, but morphine and dextrophan did not. Free sodium and magnesium ions had no effect on the accumulation of enkephalinamide, but free calcium ions decreased the accumulation in choroid plexus. Three dipeptides that are part of enkephalinamide had no effect on enkephalinamide accumulation, but tyrosine decreased the accumulation in choroid plexus. The accumulation of enkephalinamide in brain tissues showed some similarity to that of opiates. 22 references. (Author abstract modified)

001171 Hughes, M. J.; Lemons, Steve; Barnes, Charles. Department of Physiology, Texas Tech University School of Medicine, Lubbock, TX 79430 **Cyclobenzaprine: some pharmacological cardiac actions.** Life Sciences (Oxford). 23(27&28):2779-2786, 1978.

The effects of cyclobenzaprine (CBZ) on isolated spontaneously beating rabbit atria were studied. At concentrations that are not cardiotoxic, CBZ blocked muscarinic cholinergic receptors, augmented the activity of exogenously administered norepinephrine, and acted as an antihistaminic. It is concluded that CBZ is similar in action to other tricyclic compounds, particularly the antidepressants amitriptyline and imipramine. 19 references. (Author abstract modified)

001172 Huidobro-Toro, J. Pablo; Huidobro, F.; Croxatto, R. Department of Pharmacology, S1210, University of California, San Francisco, CA 94143 **Effects of beta-endorphin and D-alanine2 enkephalinamide on urine production and urinary electrolytes in the rat.** Life Sciences (Oxford). 24(8):697-703, 1979.

The intracerebroventricular administration of 0.1-3mcg human beta-endorphin (BEP) or 0.3-30mcg D-alanine2-methionine-enkephalinamide (D-ala) caused a dose dependent reduction in the urine volume of Sprague-Dawley rats. The oliguria was associated with a decrease in the concentration of sodium and potassium ions in the urine of rats previously hydrated with 25ml/kg tap water and 50ml/kg 0.5% sodium chloride. BEP was about 5 to 7 times more potent than D-ala on a molar basis. The peptide effects were antagonized by simultaneous administration of naloxone (1mg/kg ip). In rats treated chronically with morphine, no cross-tolerance to the antidiuretic effect of BEP was observed, but cross-tolerance to the changes in urine electrolytes were evident. Results suggest that morphine and the opiate peptides share a similar mechanism of action. 20 references. (Author abstract modified)

001173 Huston, Joseph P.; Jakobartl, Lisanne; Papadopoulos, Georges; Siegfried, Bert. University of Dusseldorf, Laboratory of Comparative and Physiological Psychology, Universitatsstrasse 1, 4000 Dusseldorf, Germany **Effects of nigro-striatal 6-OHDA lesions on turning elicited by cortical spreading depression.** Pharmacology Biochemistry and Behavior. 9(6):837-843, 1978.

The effects of nigro striatal 6-hydroxydopamine (6-OHDA) lesions on turning elicited by cortical spreading depression (CSD) were investigated. Rats received either unilateral 6-OHDA injections into the substantia nigra, causing ipsilateral depletions of striatal dopamine (94%) and norepinephrine (51%), or bilateral injections of same. In bilaterally 6-OHDA lesioned rats, amphetamine led to circling in a preferred direction, and CSD applied to the cortex ipsilateral to that direction induced more turning than when applied to the contralateral cortex. The striatum of the hemisphere ipsilateral to the side of amphetamine induced circling also showed a higher decrease in both dopamine and norepinephrine levels. 22 references. (Author abstract modified)

001174 Ilson, David. McGill University, Canada **Choline analogues as pharmacological tools in studies on cholinergic mechanisms. (Ph.D. dissertation).** Dissertation Abstracts International. 38(7):3151-B, 1978.

Regulation of choline transport into cholinergic nerve terminals by neuronal activity was studied, and the specificity of events involved in transmitter synthesis, storage, and release was examined. Preganglion nerve stimulation increased the uptake of the choline analogues by a frequency dependent mechanism that required Ca, but which was not regulated by transmitter release. Nerve impulses accelerate choline uptake in anticipation of the increased acetylcholine synthesis required to replenish released transmitter. The acetylation of triethylcholine appeared to limit the ganglion's ability to accumulate acetyltriethylcholine. The release of acetyltriethylcholine was frequency dependent, Ca dependent, and sensitive to blockade by Mg; acetyltriethylcholine was at least as available for release as acetylcholine. It is concluded that triethylcholine is the precursor to a cholinergic false transmitter. (Journal abstract modified)

001175 Ishitani, Ryoichi; Iwamoto, Takio. Department of Pharmacology, Faculty of Pharmaceutical Sciences, Josai University, Sakado, Saitama 350-02, Japan **Binding of H3-imipramine, H3-dimetacrine and S35-chlorpromazine to synaptosomes.** Japanese Journal of Pharmacology (Kyoto). 28(1):85-92, 1978.

The binding of tritiated imipramine, tritiated dimetacrine, and S35-labeled chlorpromazine to synaptosomes of male Wistar rat cerebral cortex was studied, using a centrifugation method. The three psychotropic drugs bound rapidly to synaptosomes at 2 degrees, with both saturable and nonsaturable components. A double reciprocal plot of the saturable binding component of these drugs revealed a single binding mode for 3H-imipramine. Additional studies in myelin fragments of rat cerebral cortex indicate that imipramine has multiple binding sites to synaptosomes and a high affinity component that is affected by freezing and thawing. 24 references. (Author abstract modified)

001176 Jenner, P.; Marsden, C. D.; Pratt, J.; Reynolds, E. H. University Department of Neurology, Institute of Psychiatry, London SE5, England **Altered serotoninergic activity in mouse brain induced by clonazepam.** British Journal of Pharmacology (London). 64(3):432P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of the benzodiazepine clonazepam on cerebral serotonergic function in male Swiss mice are reported. Intraperitoneal administration of 4mg/kg clonazepam resulted in elevated cerebral 5-hydroxyindoleacetic acid (5HIAA) and tryptophan levels, but not in elevated 5-hydroxytryptamine (5HT) levels, 3 hours later. In the presence of the monoamine oxidase inhibitors (MAOI) pargyline hydrochloride and tranylcypromine sulphate, clonazepam increased both 5HT and 5HIAA levels, compared to animals receiving MAOI alone. In the presence of probenecid, clonazepam caused an elevation of cerebral 5HT, 5HIAA, and tryptophan levels, compared to animals receiving probenecid alone; at least 50% of the rise in 5HIAA appeared to be due to the altered metabolism of cerebral 5HT, with the remainder resulting from the blockade of egress of 5HIAA caused by clonazepam. Clonazepam also reduced the depletion of 5HT utilization. However, the accumulation of 5-hydroxytryptophan induced by prior treatment with a central decarboxylase inhibitor was unaltered, suggesting that clonazepam has no effect on 5HT synthesis. 2 references. (Author abstract modified)

001177 Johnson, Alan Kim; Hoffman, William E.; Buggy, James. Department of Psychology, University of Iowa, Iowa City, IA 52242 **Attenuated pressor responses to intracranially injected stimuli and altered antidiuretic activity following preoptic-hypothalamic periventricular ablation.** Brain Research (Amsterdam). 157(1):161-166, 1978.

The effects of intraventricular injections of angiotensin II and hyperosmotic sodium chloride on arterial pressure and antidiuretic activity were compared in male Sprague-Dawley rats with electrolytic lesions of the anteroventral third ventricle (AV3V) and in sham operated rats. The mean resting blood pressures in the hydrated state of the lesioned animals were significantly lower than those of sham operated animals. Mean heartrates of the two groups did not differ. Pressor responses to hypertonic sodium chloride and to angiotensin II were significantly lower in rats with AV3V lesions than in controls, whereas phenylephrine induced pressor responses did not differ for the two groups. The lesioned animals also showed significantly attenuated changes in urine conductivity. Results indicate that AV3V lesioned animals are less responsive to certain humoral stimuli which elicit pressor responses and modulate antidiuresis. Results also support the view that periventricular tissue in the AV3V region of rats plays a critical role in the integration of neural and hormonal information involved in maintenance of body fluid balance and cardiovascular dynamics. 10 references.

001178 Johnson, D. D.; Davis, H. L.; Crawford, R. D. Dept. of Pharmacology, University of Saskatchewan, Saskatoon, Saskatchewan S7N 0W0, Canada **Epileptiform seizures in domestic fowl. VIII. Anticonvulsant activity of primidone and its metabolites, phenobarbital and phenylethylmalonamide.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(4):630-633, 1978.

The anticonvulsant activity of primidone and its metabolites, phenobarbital and phenylethylmalonamide in treating epileptiform seizures in domestic fowl was investigated. Primidone was found to be an effective anticonvulsant against seizures induced in epileptic fowl by exposure to intermittent photic stimulation. Epileptic fowl metabolized primidone to phenobarbital. Pretreatment of epileptic fowl with SKF 525A to prevent the metabolism of primidone to phenobarbital suggests that primidone itself has anticonvulsant activity. Phenylethylmalonamide, a second metabolite of primidone, appears not to have anticonvulsant properties at the same dose. 15 references. (Author abstract modified)

001179 Johnson, Kenneth M.; Dewey, William L. Department of Pharmacology and Toxicology, University of Texas Medical Branch, Galveston, TX 77550 **The effect of delta9-tetrahydrocannabinol on the conversion of (3H)tryptophan to 5-(3H)hydroxytryptamine in the mouse brain.** Journal of Pharmacology and Experimental Therapeutics. 207(1):140-150, 1978.

The effects of 30 minute pretreatment with delta9-tetrahydrocannabinol (THC) on the synthesis of tritiated 5-hydroxytryptamine (3H-5-HT) from a 10 minute i.v. pulse of tritiated L-tryptophan (3H-try) were measured in male ICR mouse brain. THC increased the amount of 3H-try accumulated by the brain, as well as the amount of 3H-5-HT synthesized. This effect was greater at intermediate doses than at the highest dose tested. THC had no effect on the actual rate of conversion of 3H-try into 3H-5-HT at any dose tested, however, and had no effect on plasma tyrosine or free tryptophan levels. THC increased total plasma tryptophan at low and intermediate doses, but had no effect at the highest dose tested. Synaptosomal uptake of 3H-try was not affected by pretreatment with THC. Results suggest that THC increases the synthesis of 5-HT not by altering the actual rate of conversion of tryptophan to 5-HT, but by altering the quantity of tryptophan available for conversion to 5-HT. 49 references. (Author abstract modified)

001180 Johnston, G. A. R.; Kennedy, Sue M. E.; Twitchin, B. Department of Pharmacology, John Curtin School of Medical Research, Australian National University, Canberra, Australia **Action of the neurotoxin kainic acid on high affinity uptake of L-glutamic acid in rat brain slices.** Journal of Neurochemistry (Oxford). 32(1):121-127, 1979.

The effects of the neurotoxin kainic acid on L-glutamic acid uptake in rat brain slices were examined. The results indicate that kainic acid inhibits the high affinity uptake of L-glutamic, D-aspartic, and L-aspartic acids. It did not influence the steady state release or potassium stimulated release of preloaded D-aspartic acid. Kainic acid bound to rat brain membranes in the absence of sodium ions in a manner indicating binding to a population of receptor sites for L-glutamic acid. Only quisqualic and L-glutamic acid inhibited kainic acid binding in a potent manner. Dihydrokainic acid was twice as potent as kainic acid as an inhibitor of high affinity L-glutamic acid uptake, but less potent as an inhibitor of kainic acid binding and less potent as a convulsant of immature rats. N-Methyl-D-aspartic acid was a potent convulsant of immature rats but did not inhibit kainic

acid binding or high affinity L-glutamic acid uptake. 47 references. (Author abstract modified)

001181 Johnston, Michael V.; Grzanna, Reinhard; Coyle, Joseph T. John Hopkins University School of Medicine, Baltimore, MD 21205 **Methylazoxymethanol treatment of fetal rats results in abnormally dense noradrenergic innervation of neocortex.** Science. 203(4378):369-371, 1979.

The effects of a single injection of methylazoxymethanol in pregnant rats at 15 days gestation were studied. In the adult offspring, the neurochemical markers for the cortical gamma-aminobutyric acid containing neurons were severely reduced, whereas the noradrenergic markers were minimally altered. A marked increase in the density of noradrenergic axons with an abnormal pattern of distribution in the atrophic cortex was demonstrated through immunohistofluorescence microscopy. It is suggested that the central noradrenergic neurons determine the number of axons to be formed early in brain development, but local factors in the terminal field regulate the ultimate distribution of the noradrenergic axons. 18 references. (Author abstract modified)

001182 Jordan, L. M.; Kenshalo, D. R., Jr.; Martin, R. F.; Haber, L. H.; Willis, W. D. Marine Biomedical Institute, University of Texas Medical Branch, Galveston, TX 77550 **Two populations of spinothalamic tract neurons with opposite responses to 5-hydroxytryptamine.** Brain Research (Amsterdam). 164:342-346, 1979.

The effects of 5-hydroxytryptamine (5-HT) on spinothalamic tract neurons were investigated in 17 monkeys (Macaca fascicularis). Either depression or excitation of spinothalamic tract neurons could be produced by iontophoretically applied 5-HT, depending on the receptive field properties of the neuron. Of 35 spinothalamic tract neurons tested, all 6 cells with deep receptive fields were excited, but most wide dynamic range and high threshold spinothalamic neurons were depressed. Results suggest that the raphe nuclei select the sensory information relayed by the spinothalamic tract to the thalamus; the raphe nuclei may suppress exteroceptive, particularly nociceptive, inputs to many spinothalamic cells and enhance the transmission of proprioceptive information to others. 20 references.

001183 Kalaria, R. N.; Prince, A. K.; Wong, P. T.-H. Department of Pharmacology, King's College, London WC2R 2LS, England **Choline uptake and the regulation of choline acetyltransferease in relation to neuronal activity.** British Journal of Pharmacology (London). 64(3):409P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, a study of the response of choline acetyltransferase (ChAT) to inorganic salts is described. ChAT activities in whole homogenates of rat and guinea-pig cerebra and in partially purified samples were assayed radiometrically at low and high ionic strengths in homogenization buffer and in buffer containing sodium chloride (NaCl) or sodium iodide (NaI). ChAT activities were increased by NaCl if the choline concentrations exceeded 20-100mcM, but were decreased at lower concentrations. This reversal of the ionic effect occurred at all concentrations of acetyl-CoA with heterogenous preparations of rat ChAT, the basic and acidic fractions, the single acidic ChAT from guinea-pig, and the heterogenous highly acidic ChAT from squid. Response to NaI were similar to those obtained with NaCl, but all preparations were more unstable in the presence of NaI. It is suggested that variations in the local concentration of choline may determine the nature of the ChAT response to the ion fluxes associated with nerve terminal depolarization. 10 references. (Author abstract modified)

001184 Kant, G. Jean; Meyerhoff, James L. Neuroendocrinology and Neurochemistry Branch, Walter Reed Army Hospital Institute of Research, Washington, DC 20012 **Release of endogenous norepinephrine and dopamine from rat brain regions in vitro.** Life Sciences. 23(21):2111-2118, 1978.

Radioenzymatic assay procedures were used to measure picomolar amounts of endogenous norepinephrine (NE) and dopamine (DA) released in from male WRC rat cortex, hippocampus, hypothalamus, striatum, accumbens/olfactory tubercles, and substantia nigra in response to elevated potassium chloride (KCl) or d-amphetamine sulfate. Amounts of NE released by 55mM KCl (expressed as percent of control) were: cortex, 313%; hippocampus, 227%; hypothalamus, 225%; accumbens/tubercle, 278%; substantia nigra, 155%. KCl stimulated release of DA was detected in striatum (414%), accumbens/tubercle (282%), and hypothalamus (312%). DA was measurable in filtrates from the substantia nigra, but levels in control and KCl stimulated samples were equal. Amphetamine stimulated NE outflow when compared to controls in 12 brain regions. DA outflow was markedly increased in most regions, especially striatum (287%), hypothalamus (387%), and accumbens/tubercle (670%). Amphetamine doubled endogenous DA outflow from the substantia nigra. 36 references. (Author abstract modified)

001185 Kaufman, Elaine E.; Nelson, Thomas; Goochee, Charles; Sokoloff, Louis. Laboratory of Cerebral Metabolism, NIMH, Bethesda, MD 20014 **Purification and characterization of an NADP-linked alcohol oxido-reductase which catalyzes the interconversion of gamma-hydroxybutyrate and succinic semialdehyde.** Journal of Neurochemistry (Oxford). 32(3):699-712, 1979.

A nicotinamide adenine dinucleotide phosphate linked enzyme capable of interconverting gamma-hydroxybutyrate (GHB) and succinic semialdehyde (SSA) was isolated from the liver and brain of male golden Syrian hamsters. The enzyme isolated from liver was purified 300 fold and showed a single band by polyacrylamide gel electrophoresis. The molecular weight of the enzyme was estimated to be about 31,000 by gel filtration and 38,000 by sodium dodecyl sulfate gel electrophoresis. The enzyme was inhibited by amobarbital, diphenylhydantoin, 2-propylvalerate, and diethyldithiocarbamate, but not by pyrazole. The enzymes from brain and liver appeared to be very similar with regard to molecular weight and kinetic constants for GHB and SSA. 36 references. (Author abstract)

001186 Kebabian, J. W.; Kebabian, P. R. Biochemical Neuropharmacology Unit, Experimental Therapeutics Branch, NINCDS, NIH, Bethesda, MD 20014 **Lergotrile and lisuride: in vivo dopaminergic agonists which do not stimulate the presynaptic dopamine autoreceptor.** Life Sciences (Oxford). 23(22):2199-2203, 1978.

The dopaminergic ergots and their specific antagonists had no effect on the presynaptic dopamine autoreceptor that regulates striatal tyrosine hydroxylase in male Osborn-Mendell rats. Apomorphine inhibited the conversion of tyrosine to catechols by striatal synaptosomes, but lergotrile and lisuride did not mimic this action. Metoclopramide, a potent dopaminergic antagonist in the anterior pituitary, did not block the inhibitory effect of apomorphine. These findings indicate that several categories of pharmacologically distinct dopamine receptors exist. 17 references. (Author abstract modified)

001187 Keller, H. H.; Da Prada, M. Pharmaceutical Research Department, F. Hoffmann-La Roche & Co., Ltd., Basel, Switzerland **Central dopamine agonistic activity and microsomal biotransformation of lisuride, lergotrile and bromocriptine.** Life Sciences (Oxford). 24(13):1211-1221, 1979.

Lisuride (0.05-0.1mg/kg), lergotrile (1mg/kg), and bromocriptine (5mg/kg) reduced the turnover of dopamine (DA) in male Wistar rat brain. Intracerebroventricular or intraperitaneal (ip) administration of lisuride caused a rapid reduction in homovanillic acid (HVA) levels but the decrease of HVA after oral administration of the drug was delayed. Pretreatment with the microsomal enzyme inhibitor proadifen potentiated and prolonged the effect of ip lisuride on cerebral DA turnover. The HVA reduction seen after lergotrile and bromocriptine was also somewhat retarded after oral administration, and proadifen again potentiated and prolonged the HVA diminution after ip drug injection. Proadifen also prolonged and intensified the hypothermic effect of all three ergolines. These results indicate that the central DA agonistic activity of these ergolines can be attributed to the actions of the drugs themselves rather than to their biotransformation into active metabolites. The retarded onset and the prolonged duration of action seen after oral administration may slow intestinal absorption and slow microsomal inactivation, respectively. 33 references. (Author abstract modified)

001188 Kerwin, R.; Pycock, C. Department of Pharmacology, University of Bristol, Bristol BS8 1TD, England **Specific stimulation of (3H)-dopamine release from dendrites of rat substantia nigra by glycine.** British Journal of Pharmacology (London). 64(3):428P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of glycine on the efflux of tritiated dopamine (3H-DA), (3H)-5-hydroxytryptamine (3H-5HT), and (3H)-gamma-aminobutyric acid (3H-GABA) from prelabeled, superfused slices of rat substantia nigra are described. A depolarizing stimulus (50mM potassium chloride) increased the efflux of 3H-5HT, 3H-DA, and 3H-GABA; this effect of potassium was markedly reduced in a low calcium, high magnesium medium. Glycine (50 and 100mcM) stimulated the efflux of 3H-DA but not of 3H-5HT or 3H-GABA; the effect of 3H-DA was abolished when strychnine hydrochloride was increased in the superfusate. GABA and beta-alanine (100mcM) had no effect on the efflux of 3H-DA. The reduction in striatal DA release reported after intranigral glycine may therefore be a result of stimulation of presynaptic DA receptors, reducing activity in the ascending nigrostriatal dopaminergic pathway. Additional studies suggest that glycine may be released only from a very small number of terminals in the nigra, whereas more diffuse elements such as glia in this region may take part in its inactivation. 6 references. (Author abstract modified)

001189 King, G. A. Department of Pharmacology, University of Toronto, Toronto, Ontario, Canada M5S 1A8 **Effects of systemically applied GABA agonists and antagonists on wave-spike ECoG activity in rat.** Neuropharmacology (Oxford). 18(1):47-55, 1979.

The effects of systemic application of gamma-aminobutyric acid (GABA) antagonists (bicuculline, picrotoxin, and pentylentetrazol) and GABA agonists (muscimol and imidazole acetate) on wave/spike electrocorticogram (ECoG) activity in awake, freely moving male Long-Evans rats were investigated. Administration of GABA antagonists or agonists caused dose dependent increases in the mean percentage occurrence of flash evoked after discharge (AD). Strychnine did not increase the occurrence of the flash evoked AD. Spontaneous discharges that resembled the flash evoked AD were induced at the highest dose of all the drugs except strychnine. In a second experiment, bicuculline, picrotoxin, and imidazole acetate induced spontaneously occurring, generalized wave/spike seizures; during these seizures, the rats assumed an immobile posture and displayed varying amounts of forearm and facial clonus. The possible correlation between the ability of drugs to supress presynaptic inhibition and their ability to induce wave/spike ECoG activity is discussed. 47 references. (Author abstract modified)

001190 Klawans, Harold L.; Hitra, Ana. Dept. of Neurological Sciences, Rush Presbyterian St. Luke's Medical Center, Chicago, IL **Striatal membrane 3H-dopamine binding in an animal model of tardive dyskinesia.** Psychopharmacology Bulletin. 14(4):72-76, 1978.

In a paper presented at the session on basic issues in tardive dyskinesia, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, a study of striatal membrane dopamine binding in an animal model of tardive dyskinesia is described. Dopamine receptor site hypersensitivity following chronic haloperidol administration was investigated to determine whether this neuroleptic haloperidol induced dopamine receptor site hypersensitivity is permanent or reversible over time. Six weeks after cessation of 3 weeks of haloperidol treatment of guinea-pigs, dopamine stereospecific binding characteristics were returned to normal control values. 13 references.

001191 Klemm, H.-P.; Baumgarten, H. G.; Schlossberger, H. G. Department of Functional Anatomy, University of Hamburg, D-2000 Hamburg 20, Germany **In vitro studies on the interaction of brain monoamine oxidase with 5,6- and 5,7-dihydroxytryptamine.** Journal of Neurochemistry (Oxford). 32(1):111-119, 1979.

In vitro studies on the interaction of brain monoamine oxidase (MAO) with (14C)5,6-dihydroxytryptamine ((14C)5,6-DHT and (14C)5,7-dihydroxytryptamine ((14C)5,7-DHT) in rat brains are reported. Incubation of homogenates with (14C)5,6-DHT and (14C)5,7-DHT or with the MAO metabolites (14C)5,6-dihydroxyindole acetic acid and (14C)5,7-dihydroxyindole acetic acid caused a time dependent breakdown of the dihydroxylated indole compounds with subsequent binding or radioactivity to perchloric acid insoluble tissue components. 5,6-DHT inactivated MAO in rat brain homogenates parallel to its decomposition and extensive protein binding. The results suggest that oxidation products of 5,6-DHT are involved in the inactivation of MAO in vitro and mainly responsible for the binding of radioactivity to brain proteins in vitro. The lack of inactivation of MAO by 5,7-DHT in vitro correlated with a low degree of radioactivity binding to homogenate protein pellets. It is maintained that these findings do not provide a plausible explanation for the mechanism involved in the well known in vivo neurotoxicity of 5,7-DHT. 23 references. (Author abstract modified)

001192 Kling, Mitchel A.; Manowitz, Paul; Pollack, Irwin W. Department of Psychiatry, College of Medicine and Dentistry of New Jersey-Rutgers Medical School, Piscataway, NJ 08854 **Rat brain and serum lithium concentrations after acute injections of lithium carbonate and orotate.** Journal of Pharmacy and Pharmacology (London). 30(6):368-370, 1978.

The serum and brain lithium concentrations of male Sprague-Dawley rats were significantly greater 8 hours after intraperitoneal injections of 1.0, 2.0, and 4.0mEq/kg lithium orotate than after the same doses of lithium carbonate. Little serum lithium remained 24 hours after injection of 2.0mEq/kg lithium carbonate, but two thirds of the 2 hour lithium concentration was present 24 hours after lithium orotate. The 24 hour brain concentration of lithium was approximately three times greater after lithium orotate than after lithium carbonate. Results suggest therapeutic brain lithium concentrations and stable serum concentrations can be achieved with lower doses of lithium orotate than of lithium carbonate. 15 references. (Author abstract modified)

001193 Knight, R. I.; Smith, I. R. Research Institute, Smith Kline & French Laboratories Limited, Mundells, Welwyn Garden City, Hertfordshire, England **Metabolism in vivo and in**

vitro of radiolabelled histamine and telemethylhistamine in rat brain. British Journal of Pharmacology (London). 64(3):404P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, a study of the metabolism of radiolabeled histamine and telemethylhistamine in rat brain is described. (14(C)Histamine (200ng, 44300d/minute) administered into the right lateral ventricle was repidly metabolized to (14C)methylhistamine and (14C)methylimidazoleacetic acid. (14C)Methylhistamine (200ng, 4100d/minute) administered intracerebroventricularly was metabolized into (14C)methylimidazoleacetic acid. In vitro studies yielded no evidence that (14C)methylhistamine was demethylated to form (14C)histamine. 4 references. (Author abstract modified)

001194 Knoll, J.; Illes, P.; Medzihradszky, K. Department of Pharmacology, Semmelweis University of Medicine, Budapest, Hungary **The action of enkephalins and enkephalin analogues on neurotransmission in the isolated nictitating membrane of the cat.** Journal of Pharmacy and Pharmacology (London). 30(6):394-395, 1978.

The activity of a series of enkephalin analogues was tested on the isolated smooth muscle of the cat nictitating membrane. Met5-enkephalin-methylester (180.0-1620.0nM) reduced the electrically stimulated twitches of the membrane in a dose dependent manner. The effect was slow in onset and reached a plateau within 10 minutes. Slow recovery occurred after washing out the drug. The inhibitory action of the peptide was readily reversed by naloxone. Leu5-enkephalin was as active on as Met5-enkephalin-methylester on the nictitating membrane, but had only one fifth the potency of the guinea-pig ileum muscle strip. The replacement of the aromatic residues methionine or leucine by n-buthylimide or cyclohexylamide resulted in substantial loss of activities. The shortening of the length of the peptide by substituting the glycine-glycine spacers by beta-alanine abolished the activity of Met5-enkephalin. Pro5-enkephalin-amide and D-Met2,Pro5-enkephalin-ethylamide were much more potent than Met5-enkephalin-methylester. With the exception of Leu5-enkephalin, the rank order of potency of the peptides on cat nictitating membrane corresponded with that obtained on the guinea-pig ileum. 10 references.

001195 Kostopoulos, George. University of Saskatchewan, Canada **Physiological and pharmacological studies on synaptic transmission in the mammalian brain. (Ph.D. dissertation).** Dissertation Abstracts International. 38(7):3065-B, 1978.

Several aspects of the physiology and pharmacology of synaptic activity in the mammalian brain were investigated. The spontaneous and evoked electrical activity of neurons in the area of the mammillary body nucleus were studied using conventional microelectrode recording techniques in anaesthetized cats. The microiontophoretic technique was employed in an effort to elucidate the properties of several neurotransmitter systems and the role that certain neuroactive substances may play in the brain. Evidence is presented which indicates that cerebrocortical and caudate neurons develop supersensitivity to noradrenaline and dopamine respectively following surgical deafferentation in rats. The efficacy of amphetamine was shown to be considerably unaltered after depletion of noradrenaline in the brain, which indicates that the central effects of amphetamine are not restricted to a presynaptic releasing action at noradrenergic synapses. The microiontophoretic effects of purines, pyrimidines and their derivatives were examined on single cortical neurons in rats anaesthetized with Penthrane. Adenosine and its nucleotides strongly depressed neuronal activity. Adenine and 3':5'-cAMP were less potent depressants. It is suggested that purines depress neurons by activating an extracellular receptor specific for adenosine. (Journal abstract modified)

001196 Kozniewska, E.; Samaan, A. H.; Skolasinska, K. Isotope Laboratory, Institute of Physiology, School of Medicine, Warsaw, Poland **Cerebrovascular response to intracarotid infusion of 5-hydroxytryptophan and L-DOPA in cats.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 233(2):281-289, 1978.

The effect of L-DOPA and 5-hydroxytryptophan on cerebral blood flow was tested. The possibility of an interaction between the monoamine precursors in their action on the cerebral vascular bed was also tested. Intracarotid administration of 5-hydroxytryptophan (10mg/kg) resulted in a slight vasoconstriction of cerebral vessels. L-DOPA (20mg/kg) administered by the same route enhanced cerebral blood flow. The effect on cerebral blood flow of L-DOPA (20mg/kg) following intracarotid 5-hydroxytryptophan (10mg/kg) administration show a potentiation of cerebral blood flow response in nonpretreated as well as in nialamide and reserpine pretreated cats. 17 references. (Author abstract modified)

001197 Kromer, W.; Teschemacher, H. Pharmakologisches Institut der Universitat Munchen, Nussbaumstrasse 26, D-8000 Munich 2, Germany **An opiate withdrawal-like phenomenon in the fetal guinea pig ileum upon naloxone challenge.** European Journal of Pharmacology (Amsterdam). 49(4):445-446, 1978.

A state of natural opioid dependence was demonstrated in the fetal guinea-pig, as evidenced by contracture evoked by the opiate antagonist naloxone in the longitudinal muscle/myenteric plexus preparation. Although ()naloxone did not elicit any effect in the ileum preparations, (-)naloxone evoked a twitch response in 4 of 9 ileum preparations from pregnant guinea pigs 1-3 days prior to parturition and in 11 of 14 ileum preparations from fetuses just prior to parturition. These contractions were prevented by atropine and were diminished by extensive washing. In contrast, only 1 of 16 preparations from nonpregnant guinea-pigs and 3 of 16 preparations from male guinea-pigs showed contractions in response to naloxone challenge. These results point to a physiological role of endorphins in pregnancy, particularly in the fetus. 5 references.

001198 Kubo, T.; Hashimoto, M.; Ohashi, T. Research Laboratories, Fujisawa Pharmaceutical Co., Ltd., 1-6, 2-Chome, Kashima, Yodogawa-ku, Osaka 532, Japan **Effects of intraventricular and intraspinal 6-hydroxydopamine on blood pressure of renal hypertensive rats.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 234(2):270-278, 1978.

In a study of the role of descending catecholaminergic neurons in the development of hypertension, 6-hydroxydopamine (6-OHDA) was administered into the lateral ventricles of normal male Sprague-Dawley rats and of rats with renal hypertension produced by unilateral clipping of the renal artery. Intraventricular administration of 6-OHDA prevented the development of renal hypertension in normal rats, but was ineffective in developed renal hypertension. The development of renal hypertension was not affected by pretreatment with intraspinal injection of 6-OHDA, which produced a marked reduction only in spinal cord noradrenaline. Results suggest that brain adrenergic neurons may participate in the production of renal hypertension, but that noradrenergic projections in the spinal cord are not essential for this process. 16 references. (Author abstract modified)

001199 Kuczenski, Ronald. Department of Pharmacology, Vanderbilt University, Nashville, TN 37217 **Effects of parachlorophenylalanine on amphetamine and haloperidol-induced**

changes in striatal dopamine turnover. Brain Research (Amsterdam). 164:217-225, 1979.

Striatal dopamine (DA) turnover was studied in male Sprague-Dawley rats pretreated subcutaneously with para-chlorophenylalanine (PCPA, 300mg/kg) 2 days prior to systemic injection of various doses of ()-amphetamine (AMPH) or haloperidol (HAL). The animals were given an intracerebroventricular injection of tritiated tyrosine 15 minutes prior to sacrifice. PCPA pretreatment potentiated the increased accumulation of striatal 3H-DA induced by doses of AMPH to 1.5mg/kg and inhibited the decrease in striatal 3H-DA accumulation observed at higher doses. The AMPH-induced increase in endogenous levels of striatal DA was inhibited by PCPA pretreatment. PCPA pretreament potentiated the HAL-induced increase in striatal 3H-DA accumulation. Results are discussed in relation to an inhibitory serotonergic influence on nigrostriatal DA function and the relationship of nigrostriatal biochemical events to AMPH-induced behavioral changes. 34 references. (Author abstract modified)

001200 Kudrin, V. S.; Osnyach, V. S.; Matyushin, A. I. Mediko-biologicheskiy fakul'tet, II Moskovskiy meditsinskiy institut imeni N. I. Pirogova, Moscow, USSR **/A study of the action of barbituric acid derivatives on the psychochemical properties of DNA./** Izucheniye deystviya proizvodnykh barbiturovoy kisloty na fiziko-khimicheskiye svoystva DNK. Farmakologiya i Toksikologiya (Moskva). 41(3):314-316, 1978.

The action of barbituric acid derivatives (phenobarbitol, sodium ethaminol and sodium amitol) on the physico-chemical properties of nucleic acids was studied. Standard and weak salt solutions were used as solvents for the DNA, which was separated from the liver of rats by the Marmur method. The influence of the acid derivatives on the spectral characteristics of the DNA is shown in a table. Sodium ethaminol and sodium amitol are shown to exert practically no influence on the temperature of fusion of the DNA molecules, while phenobarbitol raised it slightly. The phenobarbitol and sodium ethaminol are shown to increase DNA's characteristic viscosity, while sodium amitol has no such effect. In general, phenobarbitol exerts a more potent action than the other derivatives on the secondary and tertiary structures of native DNA molecules. 5 references. (Journal abstract modified)

001201 Kunitada, Satoshi; Ui, Michio. Department of Physiological Chemistry, Faculty of Pharmaceutical Sciences, Hakkaido University, Sapporo 060, Japan **The plasma cyclic AMP response to catecholamines as potentiated by phentolamine in rats.** European Journal of Pharmacology (Amsterdam). 49(2):169-176, 1978.

The potentiation of the plasma cyclic adenosine monophosphate (AMP) response to beta-adrenergic stimulation was investigated in male Wistar rats. In contrast to the sharp increases elicited by isoproterenol, epinephrine, or tyramine, norepinephrine (NE) failed to increase plasma cyclic AMP when injected alone into fasted rats. In rats pretreated with 6-hydroxydopamine or cocaine, however, there was a significant increase in plasma cyclic AMP after NE injection, suggesting that the rapid neuronal catecholamine uptake was at least partly responsible for the previous lack of NE action. Phentolamine enhanced the increase in plasma cyclic AMP induced by epinephrine, NE, or tyramine, but had no effect on the isoproterenol induced increase. Blockade of postsynaptic alpha-adrenoceptors, rather than presynaptic receptors, is likely to be involved in the phentolamine potentiation. The regulation of cyclic AMP by alpha-adrenoceptor and beta-adrenoceptor interaction on effector cell membranes is discussed. 12 references. (Author abstract modified)

001202 Kuo, Che-Hui; Hata, Fumiaki; Yoshida, Hiroshi; Yamatodani, Atsushi; Wada, Hiroshi. Department of Pharmacology I, Osaka University School of Medicine, Kitaku, Osaka 530, Japan **Effect of ascorbic acid on release of acetylcholine from synaptic vesicles prepared from different species of animals and release of noradrenaline from synaptic vesicles of rat brain.** Life Sciences (Oxford). 24(10):911-915, 1979.

Low concentrations of L-ascorbic acid caused release of acetylcholine from isolated rat, guinea-pig, and rabbit synaptic vesicles in the presence of 2mM adenosine triphosphate, 2mM magnesium chloride, and 0.00001M calcium chloride. The half maximum effect was obtained with 2-2.5mcM L-ascorbic acid, and the effect was inhibited by the addition of 1mM ethyleneglycolbis-(beta-aminoethyl ether)-N,N'-tetraacetic acid. The release of noradrenaline from rat synaptic vesicles was also enhanced by L-ascorbic acid, but the concentration required for half maximal stimulation was about 20mcM, indicating that noradrenaline release is less sensitive than acetylcholine release to L-ascorbic acid. 12 references. (Author abstract modified)

001203 Kuraishi, Y.; Harada, Y.; Satoh, M.; Takagi, H. Department of Pharmacology, Faculty of Pharmaceutical Sciences, Kyoto University, Kyoto 606, Japan **Antagonism by phenoxybenzamine of the analgesic effect of morphine injected into the nucleus reticularis gigantocellularis of the rat.** Neuropharmacology (Oxford). 18(1):107-110, 1979.

The effects of monoaminergic receptor blockers on the analgesia induced by morphine microinjection into the nucleus reticularis gigantocellularis (NRGC) of male Wistar rats were examined. Pretreatment with phenoxybenzamine (0.1-1mg/kg i.p.)suppressed the analgesic effect of morphine, but propranolol (5mg/kg i.p.)and methysergide (2mg/kg i.p.)did not. Phenoxybenzamine also inhibited morphine analgesia when administered intrathecally in a dose of 10mcg at the level of the lumbar spinal cord. These results emphasize the importance of the alpha-adrenoceptor mediated spinal noradrenergic system in the production of analgesia by morphine injected into the NRGG. 9 references. (Author abstract modified)

001204 Kuriyama, Kinya; Nakagawa, Kazuo; Naito, Katsumi; Muramatsu, Makoto. Department of Pharmacology, Kyoto Prefectural University of Medicine, Kamikyo-ku 602, Japan **Morphine-induced changes in cyclic AMP metabolism and protein kinase activity in the brain.** Japanese Journal of Pharmacology (Kyoto). 28(1):73-84, 1978.

The oral administration of morphine for 2 to 4 weeks induced an increase in cyclic adenosine monophosphate (AMP) formation by activation adenylate cyclase, attenuated responses of the cyclic AMP synthesizing system to biogenic amines added in vitro, and increased cyclic AMP dependent protein kinase activity in the mouse cerebral cortex. These changes in the activities of adenylate cyclase and protein kinase were found primarily in the crude mitochondrial and synaptosomal fractions. The narcotic antagonist levallorphan reversed the morphine induced decrease in response to biogenic amines but had no significant effect on morphine induced changes in adenylate cyclase and cyclic AMP dependent protein kinase activities. Results suggest that the cyclic AMP synthesizing system and cyclic AMP dependent protein kinase may be involved in the development of morphine dependence. 31 references. (Author abstract modified)

001205 Kvetnansky, R.; Weise, V. K.; Kopin, I. J. Institute of Experimental Endocrinology, Czechoslovakia **The origins of plasma epinephrine, norepinephrine and dopamine levels in stressed rats. (Unpublished paper)** Bethesda, MD, NIMH, 1978. 3 p.

The effects of adrenalmedullectomy (ADMX) and/or chronic treatment with guanethidine on plasma catecholamines (CA) and immobilization induced increments in epinephrine (EPI), norepinephrine (NE), and dopamine (DA) were studied to determine the origins of plasma CA. The effects of total adrenalectomy were also examined. Forced immobilization (IMMOB) produced elevations in plasma levels of epinephrine, NE and DA. Chronic treatment with guanethidine reduced by two thirds to three quarters the plasma NE and later DA responses to IMMOB, while combined ADMX and guanethidine abolished the stress induced increase in all the CA. Adrenalectomy also abolished the increases in EPI but enhanced the elevation of NE. The enhanced increase in NE was reversed by treatment with hydrocortisone. 5 references. (Author abstract modified)

001206 LaBella, Frank S.; Kim, Ryung-soon Song; Templeton, John. Department of Pharmacology and Therapeutics, Faculty of Medicine, University of Manitoba, Winnipeg, Manitoba, Canada **Opiate receptor binding activity of 17-alpha estrogenic steroids.** Life Sciences (Oxford). 23(17/18):1797-1804, 1978.

The opiate receptor binding activity of 17-alpha estrogenic steroids was investigated, using radioreceptor assay of brains from male Sprague-Dawley rats. A large number of steroids of the estrane, androstane, pregnane, and etianic acid series, including their sulfate and glucuronide conjugates, were inactive in the opiate radioreceptor assay. Only certain estrogens were active, the most potent being 17alpha-hydroxy-estrogens. The displacement curves for the active steroids were parallel to those of known opiate drugs. SC-22,000, a semisynthetic steroid with opiate effects, was a potent agonist in the assay. The sodium effect indicated the active estrane steroids to be of mixed agonist/antagonist character. 22 references. (Author abstract modified)

001207 Lai, F. M.; Spector, S. Cardiovascular-CNS Research Section, Lederle Laboratories, Pearl River, NY 10965 **The potentiating effect of clorgyline and pyrogallol on the blood pressure responses to norepinephrine.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 234(2):279-286, 1978.

Intraventricular administration of norepinephrine (NE) into pentobarbital anesthetized male Sprague-Dawley rats elicited a pressor or a depressor effect, depending on the dose injected. After a low dose, a depressor response was seen, and after a high dose, a pressor response was observed. In rats pretreated intraventricularly with clorgyline or pyrogallol, the hyptensive effect of a low dose of NE was reversed to a hypertensive effect, and the hypertensive effect of a high dose of NE was markedly potentiated. Results suggest that brain monoamine oxidase and catechol-O-methyltransferase can metabolize centrally released NE before it leaks into the peripheral circulation. 10 references. (Author abstract modified)

001208 Law, Ping-Yee; Loh, Horace H. Department of Psychiatry, Langley Porter Neuropsychiatric Institute, San Francisco, CA 94143 **3H-Leu5-enkephalin specific binding to synaptic membrane -- comparison with 3H-dihydromorphine and 3H-naloxone.** Research Communications in Chemical Pathology and Pharmacology. 21(3):409-434, 1978.

The specific binding of 3H-leu5-enkephalin to synaptic membrane in the presence of a protease inhibitor, bacitracin, was affected differently than that of 3H-dihydromorphine and of 3H-naloxone at varying physical conditions. The association and dissociation rates and the dissociation constants of the enkephalin were affected to a larger degree than those of the opiates when incubation temperature was altered from 0 to 37 degrees C. The affinities of various opioid peptides for 3H-leu-enkephalin were different from those for 3H-dihydromorphine. Alkaloids showed higher affinity for 3H-dihydromorphine binding sites than for 3H-leu5-enkephalin binding sites; the converse was true for opioid peptides, with the exception of beta-endorphin. It is concluded that 3H-leu5-enkephalin's interaction with the opiate receptor is distinctly different from those of the narcotic analgesics. This may partially account for the low in vivo analgesic potency of the enkephalins. 32 references. (Author abstract modified)

001209 Le Fur, Gerard; Kabouche, Marie; Uzan, Andre. Recherche et Pharmacie, Groupe Pharmuka, 35, quai du Moulin de Cage, F-92231 Gennevilliers, France **On the regional and specific serotonin uptake inhibition by LM 5008.** Life Sciences. 23(19):1959-1965, 1978.

The regional and specific inhibitory effects of LM-5008 on serotonin uptake were studied with rats, rabbits, and monkeys. LM-5008 was compared with clomipramine and fluoxetine, a new selective 5-hydroxytryptamine (5-HT) uptake inhibitor or brain uptake of different neurotransmitters (noradrenaline (NA), dopamine (DA), 5-HT, gamma-aminobutyric acid (GABA), glycine, glutamate, taurine, aspartate) and precursors (tryptophan, tyrosine, and choline). LM-5008 is six to seven times more effective than clomipramine and fluxetine in inhibiting 5-HT uptake and always less active on the other neurotransmitter uptakes. LM-5008 does not affect muscarinic receptors. The weak in vivo 5-HT uptake inhibition into hypothalamus and striatum may be attributable to a reversible binding of LM-5008 to the hypothalamus presynaptic membranes and to a really slight effect in the striatum. 18 references. (Author abstract modified)

001210 Lee, Tyrone Yiu-huen. University of Toronto, Canada **Cellular sites of anti-psychotic drug action. (Ph.D. dissertation).** Dissertation Abstracts International. 38(10):4759-B, 1978.

Three different experimental approaches to the cellular sites of neuroleptic action in brain tissue are described. The first approach was to determine qualitatively whether hydrophobic sites in the membrane play a predominant role in the attachment of a neuroleptic (chlorpromazine). This was accomplished by altering the membrane cholesterol and looking for marked alterations in the binding of the neuroleptic to the membrane. The second approach was to examine the sensitivity of the transmitter releasing sites to the neuroleptics. This was done by monitoring the effects of neuroleptics on the spontaneous release of dopamine from synaptosomes. The third approach was to examine the sensitivity of the presynaptic sites to neuroleptics. This was achieved by applying over 30 different neuroleptics to electrically stimulated rat striatal slices containing radioactive dopamine. The general conclusion is that there are presynaptic sites on dopamine neurones which are stereospecifically sensitive to neuroleptics. (Journal abstract modified)

001211 Lemaire, Simon; Magnan, Jacques; Regoli, Domenico. Department of Pharmacology, Centre Hospitalier Universitaire, Sherbrooke, Quebec JIH 5N4, Canada **Rat vas deferens: a specific bioassay for endogenous opioid peptides.** British Journal of Pharmacology (London). 64(3):327-329, 1978.

The ability of beta-endorphin to inhibit electrically evoked contractions of the vas deferens was estimated in preparations from the cat, rat, rabbit, and guinea-pig. Among these preparations, only the rat and rabbit vasa deferentia were sensitive to the action of beta-endorphin, with respective ID50 values (concentration of the opiate agonist that reduces the contractions by 50%) of 130 and 110nM. This activity of beta-endorphin was completely reversed by 50nM naloxone. Rats deferens was much more sensitive to beta-endorphin than to the enkephalins and narcotic analgesics. However, introduction of D-Ala in position 2 of leucine-enkephalin enhanced the activity of the

opioid peptide to the order of that of beta-endorphine. It is concluded that the rat vas deferens preparation provides a specific bioassay for endogenous opioid peptides and related compounds. 12 references (Author abstract modified)

001212 Lembeck, F.; Holzer, P.; Schweditsch, M.; Gamse, R. Institut fur Experimentelle und Klinische Pharmakologie der Universitat Graz, Universitatsplatz 4, A-8010 Graz, Austria **Elimination of substance P from the circulation of the rat and its inhibition by bacitracin.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 305(1):9-16, 1978.

The elimination of substance P (SP) from the circulation of the rat following infusion of SP into different vascular regions was investigated, and the effects of bacitracin on the elimination of SP were measured. The highest degree of elimination of SP occurred in the liver and in the hind limbs, followed by the kidney. In contrast to the pronounced inhibiton of the inactivation of SP by bacitracin in vivo, the in vitro inactivation of SP by rat plasma and in the isolated perfused rat hind quarter was hardly influenced by bacitracin. 27 references. (Author abstract modified)

001213 Lemmer, Bjorn; Wenda, Klaus. Centre of Pharmacology, J. W. Goethe University, Theodor-Stern-Kai 6, D-6000 Frankfurt/M 70, Germany **Diurnal rhythms in noradrenaline turnover and motility after reserpine and 6-hydroxydopamine.** Pharmacology Biochemistry and Behavior. 10(3):361-368, 1979.

The effects of reserpine or 6-hydroxydopamine (6-OHDA) on cardiac noradrenaline (NA), diurnal variations in NA turnover, and motor activity were investigated in male Wistar rats maintained on a 0700-1900 hour light/1900-0700 hour dark schedule. The initial depletion of cardiac NA after acute application of either drug was significantly greater when the drugs were injected at 2000 hours than at 0800 hours. In both photoperiods, the cardiac NA turnover was increased after peripheral sympathectomy with 6-0HDA or amine depletion with reserpine. Inhibition of protein synthesis had no effect, but ganglionic blockade with chlorisondamine abolished the rhythm of cardiac NA turnover. The 6-ODHA treatment did not significantly affect the diurnal rhythm in motor activity, but subacute treatment with reserpine had differential effects on motor activity, varying with the time of injection. Results indicate that diurnal variations in levels of neuronal and motor activity can influence drug effects and must be taken into account in animal studies. 29 references. (Author abstract modified)

001214 Lester, Bruce R.; Peck, Ernest J., Jr. Department of Cell Biology, Baylor College of Medicine, Texas Medical Center, Houston, TX 77030 **Kinetic and pharmacologic characterization of gamma-aminobutyric acid receptive sites from mammalian brain.** Brain Research (Amsterdam). 161(1):79-97, 1979.

Sodium dependent (Na) and sodium independent (-Na) receptive sites for gamma-aminobutyric acid (GABA) were characterized, using synaptic plasma membranes from bovine and rat brain. The thermodynamic constant (Kd) for Na GABA binding (5.OmcM) corresponds to the apparent Michaelis constant for neuronal GABA transport, while the Kd for -Na binding agrees with that previously determined for the putative postsynaptic receptor. Maximal binding activities of about 5 and 55pmole/mg protein were obtained for -Na and Na binding, respectively. Nipecotic acid and diaminobutyric acid inhibited both synaptosomal GABA uptake and Na binding of GABA to synaptic plasma membrane, but not -Na binding. Bicuculline inhibited -Na (3H)GABA binding at low concentrations, but affected uptake and Na binding of (3H)GABA only at high concentrations. Beta-alanine inhibited the -Na binding site, but was ineffective at the Na binding site and did not interfere with synaptosomal uptake of GABA. High concentrations of chlorpromazine and N-ethylmaleimide inhibited Na binding, but were ineffective at the -Na binding site. These results suggest that the -Na binding site is a postsynaptic receptor and the Na binding site is the neuronal uptake receptive site. 31 references. (Author abstract modified)

001215 Leysen, Josee E.; Niemegeers, Carlos J. E.; Tollenaere, Jan P.; Laduron, Pierre M. Department of Pharmacology, Janssen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **Serotonergic component of neuroleptic receptors.** Nature (London). 272(5649):168-171, 1978.

The relative binding affinities of a series of serotonin and dopamine agonists and antagonists for rat frontal cortex and striatal receptors were examined in vivo and in vitro. The neuroleptic receptor sites in the frontal cortex labeled by (3H)spiroperidol were predominantly serotonergic and virtually identical to those labeled by (3H)lyseric acid diethlamide. Significant correlations were obtained between the binding activities in the rat frontal cortex and in vivo potencies in the pharmacological antitryptamine test and between binding activities in the striatum and potencies in the antiapomorphine test. These results suggest that serotonergic, as well as dopaminergic, receptors are involved in the mechanism of action of neuroleptic drugs. 26 references.

001216 Libet, Benjamin. Dept. of Physiology, University of California, School of Medicine, San Francisco, CA 94143 **Which postsynaptic action of dopamine is mediated by cyclic AMP?** Life Sciences (Oxford). 24(12):1043-1057, 1979.

The experimental basis for proposals that adenosine 3',5'-cyclic monophosphate (cAMP) acts as intracellular mediator of one of two postsynaptic actions of dopamine (DA) in mammalian sympathetic ganglia is analyzed. A review of the evidence indicates that cAMP does not act as the direct transmitter for the slow inhibitory postsynaptic potential, but may modulate the slow excitatory postsynaptic potential (s-EPSP) response to acetylcholine (ACh). Guanosine 3',5'-cyclic monophosphate (cGMP) also appears to mediate the production of the s-EPSP by ACh. Thus, cAMP appears to have a synergistic rather than opposite physiological action in relation to cGMP. A reexamination of the functional significance of related DA activated adenyl cyclase systems in the brain is suggested. 68 references. (Author abstract modified)

001217 Lichtensteiger, W.; Richards, J. G.; Kopp, H. G. Department of Pharmacology, University of Zurich, Zurich, Switzerland **Changes in the distribution of non-neuronal elements in rat median eminence and in anterior pituitary hormone secretion after activation of tuberoinfundibular dopamine neurones by brain stimulation or nicotine.** Brain Research (Amsterdam). 157(1):73-88, 1978.

The proportion of portal capillary surface covered by non-neuronal elements (mainly tanycytes) in the median eminence was measured by quantitative electron microscopy in ovariectomized female Sprague-Dawley-Ivanovas rats pretreated with estrogen and progesterone. The percentage of capillary surface covered by nonneuronal profiles was markedly reduced by electrical stimulation in the medial amygdaloid nucleus or by systemic administration of 1mg/kg nicotine; the tuberoinfundibular dopamine (DA) system simultaneously responded by an increase in cellular fluorescence intensity, reflecting neuronal activation. The action of nicotine was prevented by pretreatment with 5mg/kg pimozide. Nicotine also lowered serum levels of growth hormone and prolactin; pimozide antagonized only the effect on prolactin. While the reaction of DA neurons and capillary coverage by tanycytes were correlated with each other in individu-

al rats, no significant correlation was observed between tanycyte response and hormone levels. These results indicate that rapid changes in the proportion of portal capillary surface covered by nonneuronal profiles can be elicited by stimulation of extrahypothalamic brain areas or by activation of cholinergic mechanisms. The tanycyte response appears to be mediated at least in part by the tuberoinfundibular DA neurons. 45 references. (Author abstract modified)

001218 Lieberman, K. W.; Stokes, P. E.; Van der Noot, G. Department of Psychiatry, Payne Whitney Clinic, New York Hospital-Cornell University Medical Center, New York, NY 10021 **Lithium metabolism and intracellular electrolytes.** Brain Research Bulletin. 3(5):415-418, 1978.

The relationship between endogenous concentrations of sodium (Na) and potassium (K), and the distribution of lithium (Li) across the cellular membrane separating the extracellular and intracellular compartments, was investigated in swine and in HK and LK sheep. Prior to lithium administration, a 16 fold variation in intracellular Na and a 6.5fold variation in intracellular K was found in the three subject groups. Following oral Li, the ratio of erthrocyte/plasma Li was directly related to the prelithium erythrocyte Na concentration and inversely related to the prelithium erthrocyte K concentration. 24 references. (Author abstract modified)

001219 Liljequist, Sture. Dept. of Pharmacology, University of Goteborg, S-40033, Goteborg, Sweden **Changes in the sensitivity of dopamine receptors in the nucleus accumbens and in the striatum induced by chronic ethanol administration.** Acta Pharmacologica et Toxicologica (Kobenhavn). 43(1):19-28, 1978.

Changes in the sensitivity of dopamine receptors in the nucleus accumbens and in the striatum induced by chronic ethanol administration were investigated. Sprague-Dawley rats were maintained on ad libitum food and a forced intake regimen of ethanol for up to 270 days. Bilateral application of dopamine (DA) into the nucleus accumbens of both chronic ethanol rats and rats undergoing withdrawal produced a pronounced increase in coordinated locomotor activity which was 8 to 10 times higher than that of untreated water control rats. It is concluded that prolonged ethanol administration produced an increased sensitivity of the DA receptors in the nucleus accumbens and further supports the contention that central catecholamine mechanisms are involved in the mediation of the withdrawal syndrome observed after chronic treatment with ethanol. 34 references. (Author abstract modified)

001220 Liljequist, Sture; Carlsson, Arvid. Department of Pharmacology, University of Goteborg, Fack, S-400 33 Goteborg, Sweden **Alteration of central catecholamine metabolism following acute administration of ethanol.** Journal of Pharmacy and Pharmacology (London). 30(11):728-730, 1978.

The effects of acute administration of a small dose of ethanol (2.36g/kg) on central catecholamine metabolism were examined in female NMRI mice. Ethanol retarded the conversion of DOPA into dopamine, as evidenced by increased concentrations of DOPA concurrent with decreased concentrations of dopamine. The formation of 3-methoxytyramine from dopamine was also markedly retarded. Ethanol did not inhibit the accumulatin of noradrenaline from DOPA or its conversion into normetanephrine. Results indicate that ethanol, even in small doses, may alter the metabolism of central catecholamines by affecting several different mechanisms. 19 references.

001221 Lin, M. T.; Pang, I. H.; Chern, Y. F.; Chern, S. I. Department of Physiology and Biophysics, National Defence Medical Center, Taipei, Taiwan **Effects of 5,7-dihydroxytryptamine and p-chlorophenylalanine on temperature regulation in rats.** Journal of Pharmacy and Pharmacology (London). 30(11):723-725, 1978.

Thermoregulatory responses to different ambient temperatures were assessed in male Sprague-Dawley rats given intraventricular injections of 5,7-dihydroxytryptamine (5,7-DHT) or intraperitoneal injections of p-chlorophenylalanine (PCPA) to deplete brain 5-hydroxytryptamine (5-HT). Both 5,7-DHT and PCPA treated rats maintained thermal balance but exhibited abnormalities in thermoregulatory responses. The 5,7-DHT treated animals displayed an increase in both heat production and heat loss, while PCPA treated animals displayed a decrease in heat production and heat loss when exposed to temperatures of 8 and 22 degrees centigrade. In 5,7-DHT treated rats enhanced vasodilatation, mainly confined to tail and footsole, counteracted the increased heat production. In spite of the similarity in brain concentrations of 5-HT in the PCPA and 5,7-DHT treated rats, the PCPA animals showed intact functioning of 5-HT neurons. 22 references.

001222 Lin, Mao-Tsun. Yale University **Brain monoamines and temperature regulation. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 77-28148, HC$15. MF$7.50. 117 p. 1977.

Thermoregulatory responses to a variety of thermal stresses were examined in groups of rabbits treated with intracerebroventricular injections of either 6-hydroxydopamine (6-OHDA) or 5,7-dihydroxy-tryptamine (5,7-DHT). Changes in ambient temperatures, changes in hypothalamic temperatures, and febrile responses to the pyrogenic agent prostoglandin E1 were compared to those of appropriate control rabbits. Both experimental groups were capable of maintaining their internal body temperatures within normal limits over a wide range of ambient temperatures. Both groups retained preoptic anterior hypothalmic thermosensitivity, and both responded to pyrogenic challenges in an attenuated fashion. Specific alterations in the thermoeffector outputs were noted in both groups of animals. It is concluded that brain monoaminergic pathways in the rabbit, while exerting some influence on the way in which body temperatures is regulated, are not essential integral parts of the thermoregulatory system. (Journal abstract modified)

001223 Lippa, A. S.; Sano, M. C.; Coupet, J.; Klepner, C. A.; Beer, B. Department of Central Nervous System Research, Lederle Laboratories, Pearl River, NY 10965 **Evidence that benzodiazepine receptors reside on cerebellar Purkinje cells: studies with ""nervous" mutant mice.** Life Sciences (Oxford). 23(22):2213-2217, 1978.

To determine the cellular localization of benzodiazepine receptors, tritiated diazepam binding was studied in brains of nervous mutant mice, which carry an autosomal recessive mutation resulting in selective degeneration of cerebellar Purkinje cells. The age related, regionally specific loss of (3H)diazepam binding sites in these mutant mice paralleled the loss of cerebellar Purkinje cells. These results suggest that benzodiazepine receptors are located on cerebellar Purkinje cells. 24 references. (Author abstract modified)

001224 Lipton, J. M.; Kennedy, J. I. Department of Physiology, University of Texas Health Science Center, Dallas, TX 75235 **Central thermosensitivity during fever produced by intra-PO/AH and intravenous injections of pyrogen.** Brain Research Bulletin. 4(1):23-24, 1979.

Thermosensitivity during fever induced by bacterial pyrogens was studied in squirrel monkeys with thermodes implanted in the preoptic/anterior hypothalamic region (PO/AH) and the medulla oblongata. Changes in rectal temperature (T/re) and oxygen consumption in response to heating and cooling of the

PO/AH were reduced during fever caused by injections of bacterial endotoxin into the PO/AH, compared with changes produced during afebrile periods. PO/AH thermosensitivity was also reduced during fever caused by iv administration of bacterial pyrogen. Prolonged cooling of the PO/AH or medulla oblongata during fever induced by central or peripheral administration of pyrogens did not cause T/re to rise above 41.1degrees, although local heating reduced T/re or limited the fever maximum. Results suggest that both pools of central thermoreceptors can limit maximal fever by reacting to local high temperature, but that lowered temperature in either region cannot raise T/re above a level determined by antagonistic input from thermoreceptors in other parts of the body. Injections of sodium salicylate into the PO/AH had no effect on thermoresponsiveness of the region, suggesting that salicylates do not produce antipyresis by acting directly on thermosensitive cells of the central temperature control system. 37 references. (Author abstract modified)

001225 Llorens, C.; Martres, M. P.; Baudry, M.; Schwartz, J. C. Unite 109 de Neurobiologie, Centre Paul Broca l'INSERM, 2ter, rue d'Alesia F-75014 Paris, France **Hypersensitivity to noradrenaline in cortex after chronic morphine: relevance to tolerance and dependence.** Nature (London). 274(5671):603-605, 1978.

The involvement of noradrenergic neurons in the long-term effects of opiates was studied in male Wistar rats. (3H)naloxone binding in brain regions receiving noradrenergic inputs was measured after 6-hydroxydopamine lesion of noradrenergic cell bodies. These lesions resulted in a significant decrease in (3H)naloxone binding in cerebellum and cortex, suggesting that opiate receptors are present on noradrenergic terminals in these regions. Rats chronically treated with morphine developed increased responsiveness of the cortical cyclic adenosine monophosphate system to catecholamines, accompanied by an increase in the number of beta-adrenergic receptors. Implications of these results for models of opiate tolerance and dependence are discussed. 25 references.

001226 Lodge, D.; Headley, P. M.; Curtis, D. R. Department of Pharmacology, John Curtin School of Medical Research, P.O. Box 334, Canberra City, ACT 2601, Australia **Selective antagonism by D-alpha-aminoadipate of amino acid and synaptic excitation of cat spinal neurons.** Brain Research (Amsterdam). 152(3):603-608, 1978.

The action of D-alpha-aminoadipate (D-alpha-AA) on the excitation of spinal interneurons in the cat by a series of excitatory amino acids was studied and the action of D-alpha-AA on the cholinergic and noncholinergic synaptic responses of Renshaw cells produced by stimulation of ventral and dorsal roots were examined. D-alpha-AA rarely decreased and more frequently increased the spontaneous firing rate of spinal neurons, and reductions in the amplitude of extracellularly recorded action potentials during excitatory amino acid administration were exacerbated by D-alpha-AA. D-alpha-AA convincingly antagonized the action of N-methyl-D-aspartate, but was less effective against the other excitants. D-alpha-AA reduced the dorsal root response of 11 of 12 Renshaw cells. It is concluded that D-alpha-AA appears to be a useful agent for distinguishing glutamate and asparate mediated synaptic excitations of central neurons. 15 references.

001227 London, Edythe D.; Coyle, Joseph T. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Pharmacological augmentation of acetylcholine levels in kainate-lesioned rat striatum.** Biochemical Pharmacology (Oxford). 27(24):2962-2965, 1978.

The ability of systemically administered choline chloride and physostigmine to elevate acetylcholine (ACh) levels in the kainate lesioned male Sprague-Dawley rat striatum was investigated. Treatment with choline chloride (100mg/kg) doubled the level of ACh in the lesioned striatum, but had no effect on control striata or those contralateral to the lesion. Treatment with 1mg/kg physostigmine doubled the ACh levels in the lesioned striatum, contralateral striatum, and control striatum, indicating a lack of specificity of this agent. In addition to its effects of ACh, choline chloride significantly elevated gamma-aminobutyric acid (GABA) levels in lesioned striata, while physostigmine had no effect on GABA. Results indicate that precursor loading or inhibition of degradation of ACh can at least partially correct ACh deficits in this animal model of Huntington's disease. The clinical implications of these findings are discussed, and it is suggested that patients who are unresponsive to cholinoceptive agents alone may respond to a treatment program aimed at enhancing both cholinergic and GABA mediated function. 30 references.

001228 London, Edythe D.; Harris, Larrel W.; Heyl, William C.; Coyle, Joseph T. Department of Pharmacology and Exp. Therapeutics, Johns Hopkins University School of Medicine, 725 N. Wolfe Street, Baltimore, MD 21204 **Effect of 2-dimethylaminoethanol in kainate-lesioned rat striatum: anomaly in the radioenzymatic assay of acetylcholine.** Communications in Psychopharmacology. 2(4):357-364, 1978.

The effects of systemic treatment with 2-dimethylaminoethanol (DMAE) on striatal acetylcholine (ACh) levels in control male Sprague-Dawley rats and in rats with unilateral kainate lesions of the corpus striatum were assassed by radiometric enzymatic assay and pyrolysis gas chromatography. In the lesioned striata, ACh was reduced by approximately 65%. The radioenzymatic assay indicated that DMAE reversed this deficit, increasing apparent ACh levels in lesioned and contralateral striata by 164% and 102%, respectively, and increasing ACh in control striata by only 14%. This increase was detectable 15 minutes after DMAE administration and greatest at 60 minutes. In contrast, the gas chromatographic assay indicated that DMAE increased ACh in lesioned, contralateral, and control striata by only 20-35%. These results suggest that the kainate induced ACh deficiency is minimally reversed by DMAE and that DMAE is converted to a substance that cross-reacts in the radioenzymatic assay for ACh in kainate lesioned rats. 18 references. (Author abstract)

001229 Loonen, Anton J. M.; Van Wijngaarden, Ineke; Janssen, Paul A. J.; Soudijn, Willem. Department of Pharmaceutical Chemistry, University of Amsterdam, Plantage Muidergracht, 24, Amsterdam, The Netherlands **Regional distribution of halopemide, a new psychotropic agent, in the rat brain at different time intervals and after chronic administration.** Life Sciences (Oxford). 24(7):609-614, 1979.

The regional distribution of halopemide in male Wistar rat brain was studied for 8 hours after a single dose (0.8mg/kg subcutaneously) and after chronic treatment (0.63mg/kg, twice daily for 5 days). Only a small amount of the drug penetrated into the brain, and the maximum concentration was reached 1 to 2 hours after injection. The drug was distributed evenly over the brain, with the exception of higher concentrations in the septum and striae medullares. After 8 hours, only 0.0004% of the injected dose was present in brain. In the pituitary, the level of halopemide remained high after 8 hours and labeled metabolites were not detectable. The concentration of halopemide in the adenohypophysis tended to be higher than that at the neurohypophysis. Chronic treatment did not significantly influence the distribution profile brain concentration, and percentage of unaltered halopemide in the brain, pituitary gland, and plasma.

This new antipsychotic compound is structurally related to the butyrophenones but has a different pharmacological and clinical profile. 6 references. (Author abstract modified)

001230 LoPachin, Richard M.; Reigle, Thomas G. University of Wisconsin, School of Pharmacy, Madison, WI 53706 **The effects of several narcotic analgesics on brain levels of 3-methoxy-4-hydroxyphenylethylene glycol sulfate in the rat.** Journal of Pharmacology and Experimental Therapeutics. 207(1):151-158, 1978.

The acute administration of levorphanol, morphine, anileridine, methadone, cyclazocine, and pentazocine increased brain levels of 3-methoxy-4-hydroxyphenylethylene glycol sulfate (MOPEG-SO4) in male Sprague-Dawley rats. Drug induced increases in this norepinephrine metabolite were dose dependent, and peak drug effects generally occurred 1 hour after i.p. injection. MOPEG-SO4 returned to control values or below within 6-8 hours after administration of the opiate agonist or partial agonist. The narcotic effect appeared to be stereospecific, since high doses of d-methadone and dextrorphan produced no change or only slight increases in brain MOPEG-SO4 levels. The drug induced increases in brain MOPEG-SO4 levels were antagonized by naloxone. The rate of disappearance of MOPEG-SO4 from the brains of rats treated with pargyline was not decreased by the opiate agonists tested, indicating that the production of an increase in brain norepinephrine turnover is a specific component of the pharmacological actions of narcotic analgesics. 23 references. (Author abstract modified)

001231 Lovenberg, Walter; Kuhn, Donald M. Section on Biochemical Pharmacology, National Heart, Lung, and Blood Institute, Bethesda, MD **Role of hydroxylase cofactor in serotonin biosynthesis.** Psychopharmacology Bulletin. 14(4):44-46, 1978.

In a paper presented at the session on the biochemistry and potential use of hydroxylase cofactors as an index of aminergic activity, at the 16th annual meeting of the American College of Neuropsychopharmacology, held at San Juan, PR, December 1977, the role of hydroxylase cofactors in serotonin biosynthesis is reviewed. Research results indicate that the activity of tryptophan hydroxylase can be altered by an apparent phosphorylating process requiring ATP and magnesium. Kinetic studies indicate that ATP/magnesium increases the affinity of the enzyme for its cofactor. This process is independent of cyclic nucleotides and can be stimulated by low concentrations of calcium. It is hypothesized that under certain conditions, cofactor levels or the enzyme's affinity for the cofactor may be important determinants of the rate of serotonin synthesis in the brain. 13 references.

001232 Lujan, Miguel; Chau-Pham, Thuy T.; Aceto, Mario D.; Dewey, William L. Department of Pharmacology, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298 **The effect of sodium ion on antinociception and opiate binding in vivo.** Life Sciences. 23(14):1431-1440, 1978.

The effects of changes in the in vivo concentration of sodium ion on the antinociceptive and stereospecific binding activity of morphine were investigated in male albino mice. Large quantities of NaCl and CaC12, but not KCl, given intraperitoneally decreased the antinociceptive activity of morphine. NaCl also antagonized the effect of morphine on the stereospecific binding of opiates. This high dose of NaCl doubled the level of sodium in the brain but did not affect the specific gravity of brain tissue. These in vivo effects of NaCl confirm the previously reported antagonistic effects of NaCl in vitro. They also support the view that the opiate binding site may have two different conformations: the antagonist or sodium ion conformation and the agonist or nonsodium conformation. These conformations are suggested by the fact that the sodium ion not only reduced the antinociceptive activity and reversed the increase in the ratio of stereospecific binding induced by morphine, but also increased the antagonistic activity of nalaxone. 25 references. (Author abstract modified)

001233 Lundy, Paul M.; Magor, Graeme F. Defence Research Establishment Suffield, Department of National Defence, Ralston, Alberta, Canada **Cyclic GMP concentrations in cerebellum following organophosphate administration.** Journal of Pharmacy and Pharmacology (London). 30(4):251-252, 1978.

The effect of soman, atropine and some anticonvulsants, and the effect of atropine and three anticonvulsants on the cerebellar cyclic gamma-aminobutyric acid (cGMP) in microwaved tissue of male Sprague-Dawley rats was calculated. Diazepam, clonazepam, and atropine sulphate or aminooxyacetic acid hemi-hydrochloride (AOAA) lowered cGMP concentrations at doses that blocked soman induced convulsions. Diazepam, clonazepam and AOAA, at doses sufficient to control convulsions, blocked the increase in cGMP concentrations normally seen following soman at the onset of seizures. In no case did the cGMP following soman in combination with either benzodiazepine reach control values. Atropine had no significant effect on the soman induced increase in cGMP concentrations or on convulsive activity. The studies show that anticonvulsants which are believed to act primarily via gamma-aminobutyric acidergic mechanisms, block soman convulsions as well as certain neurochemical changes induced by this compound. 17 references.

001234 Lyles, Geoffrey A. Department of Biochemistry, University of Tennessee, Knoxville, TN 37916 **Effects of L-DOPA administration upon monoamine oxidase activity in rat tissues.** Life Sciences. 22(7):603-609, 1978.

The effects of L-DOPA administration in various doses (250, 500 and 1000mg/kg for 7 days) upon type-A and type-B monoamine oxidase (MAO) activities in rat tissues were investigated using the substrates 5-hydroxytryptamine, tyramine, and benzylamine. The specific activities of MAO in heart, kidney, and brain were significantly increased after L-DOPA, whereas liver and vas deferens MAO was unchanged. None of the observed changes was totally specific for either form of the enzyme, although some evidence for a slight selectivity on type-A MAO of heart and type-B MAO of kidney and brain was obtained. These results indicate that some tissues may respond to elevated intracellular catecholamine levels, resulting from L-DOPA administration, by increasing their capacity to deaminate those amines. It is concluded that, at present, the exact mechanims by which these changes are brought about is unknown. 19 references. (Author abstract)

001235 Lyness, William H.; Mycek, Mary J. Department of Pharmacology, New Jersey Medical School, 100 Bergen Street, Newark, NJ 07103 **The effect of probenecid on spontaneous motor activity in rats.** Neuropharmacology (Oxford). 17(3):211-213, 1978.

To investigate the effect of probenecid on spontaneous motor activity, total activity of rats following intraperitonneal administration of 200 mg/kg, the dose routinely used in the measurement of cerebral monoamine turnover, was monitored. Probenecid was found to produce a marked decrease in the motor activity of rats. The onset of the response was observed in less than 5 minutes and persisted for 130 to 140 minutes. The sedation appears to be dose related. Results suggest that probenecid may influence other central processes in addition to the acid transport system of the choroid plexus; therefore the validity of probenecid as a methodology for estimating cerebral amine turnover may be questionable. 3 references. (Author abstract modified)

001236 Mailman, Richard B.; Krigman, Martin R.; Mueller, Robert A.; Mushak, Paul; Breese, George R. Dept. of Psychiatry, University of North Carolina School of Medicine, Chapel Hill, NC 27514 **Lead exposure during infancy permanently increases lithium-induced polydipsia.** Science. 201(4356):637-639, 1978.

The effects of lead (200 miligrams per kilogram) administered daily by intubation to Long-Evans rats on days 3 through 30 of life on lithium induced polydipsia were investigated. Thirty to 180 days after cessation of lead administration, the lead treated rats were consistently more polydipsic after lithium administration than were pair treated controls. Lithium increased the plasma renin activity equally in both the lead treated and the control groups. These data are evidence that there may be permanent natural changes induced by postnatal exposure to lead that are manifested by pharmacological challenge with lithium. 17 references. (Author abstract)

001237 Manara, Luciano; Luzzani, Franco. Istituto di Ricerche Farmacologiche 'Mario Negri,' Via Eritrea, 62, I-20157 Milan, Italy **Dose of desipramine and in vivo accumulation of 1-3H-noradrenaline in the rat heart and vas deferens.** Communications in Psychopharmacology. 2(3):243-249, 1978.

The relative roles of the presumed intraneuronal versus membrane pump sites of desipramine action at the adrenergic nerve terminals were investigated in vivo as a function of the drug dose. Pretreatment of rats with 1 or 10mg/kg intraperitoneally administered desipramine, reduced the accumulation of intravenously administered 1-3H-noradrenaline in the heart. Only after 10mg/kg of desipramine was there extensive metabolism of the accumulated amine, a finding consistent with impairment of noradrenaline binding to storage granules. Thus, the intraneuronal action of desipramine, which did not occur at the lower dose, appears to be less specific than the supposed effect at the neuronal membrane pump which can be seen at the lower dose. In the vas deferens, accumulation of the labelled catecholamine was significantly increased by desipramine at 1mg/kg while at 10mg/kg, the drug showed a tendency to depress accumulation. 22 references. (Author abstract)

001238 Mandell, Arnold J.; Bullard, Wilson P. Dept. of Psychiatry, University of California at San Diego, La Jolla, CA 92037 **Regional and subcellular distribution and factors in the regulation of reduced pterins in rat brain.** Psychopharmacology Bulletin. 14(4):46-49, 1978.

In a paper presented at the session on the biochemistry and potential use of hydroxylase cofactors as an index of aminergic activity, at the 16th annual meeting of the American College of Neuropsychopharmacology, held at San Juan, PR, December 1977, regional and subcellular distribution and factors in the regulation of reduced pterins in rat brain are reviewed. A significant correlation between the regional distribution of pterins and tyrosine hydroxylase covariation of pterins with synaptosomal dopamine, but not serotonin synthesis, and a significant partial correlation of pterins with dopamine synthesis are reported. 5 references.

001239 Mao, C. C.; Revuelta, A.; Marco, E.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **The turnover rate of GABA in brain nuclei of rats injected with DA receptor antagonists and GABA receptor agonists.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 447-452).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the turnover rate of gamma-aminobutyric acid (GABA) in brain nuclei of male Sprague-Dawley rats injected with dopamine (DA) receptor antagonists and GABA receptor agonists was reported. GABA turnover was estimated by mass fragmentography in brain nuclei of rats infused with 13C labeled glucose. Haloperidol and clozapine enhanced GABA turnover in globus pallidus and nucleus accumbens. Haloperidol reduced GABA turnover in the caudate nucleus, but did not affect that of substantia nigra. Clozapine increased GABA turnover in both caudate and substantia nigra. Two GABA mimetics, muscimol and diazepam, reduced GABA turnover in caudate, nucleus accumbens, and substantia nigra, but not in globus pallidus. The regulation of GABA neurons by GABA receptors and the interaciton between neurons containing GABA and DA are discussed. 36 references. (Author abstract modified)

001240 Marks, Michael J.; Seeds, Nicholas W. Department of Biochemistry, Biophysics and Genetics, University of Colorado Medical Center, Denver, CO 80262 **Ouabain-ATPase interaction in brain cells maintained as reaggregates or surface cultures.** Life Sciences (Oxford). 23(27&28):2745-2755, 1978.

The sodium/potassium stimulated adenosine triphosphatase (ATPase) of 17-23-day-old C57B/6J mouse brain cell reaggregates showed heterogenous interactions with ouabain, as measured by inhibition of enzyme activity, inhibition of triatiated digitoxin binding, and inhibition of (86Rb) uptake. This heterogenous interaction could be resolved into two homogenous components, and the kinetic parameters of ouabain/ATPase interaction in the reaggregated were comparable to those previously observed in brain. Ouabain interaction with mouse brain cells in surface culture appeared to be homogenous, and the high affinity drug-tissue interaction had about 1% the number of binding sites found in the reaggregates. 21 references. (Author abstract modified)

001241 Marks, Michael J.; Seeds, Nicholas W. Department of Biochemistry, Biophysics, and Genetics, University of Colorado Medical Center, Denver, CO 80262 **A heterogenous ouabain-ATPase interaction in mouse brain.** Life Sciences (Oxford). 23(27&28):2735-2744, 1978.

The interaction between ouabain and sodium/potassium stimulated adenosine triphosphatase (NaKATPase) in C57B/6J mouse brain and liver was investigated, using three different methods. The heterogeneity of the interaction of ouabain with NaKATPase in brain was demonstrated by inhibition of ATPase activity, by binding of tritiated ouabain, and by inhibition of tritiated digitoxin binding. The heterogenous interaction in mouse brain could be resolved into two components, suggesting two sites of action. The interaction of kidney NaKATPase with ouabain appeared to be homogenous, and kidney showed a lower sensitivity than brain to ouabain. Possible mechanisms responsible for the heterogeneity of the ouabain interaction with brain are discussed. 26 references. (Author abstract modified)

001242 Marks, Neville; Kastin, Abba J.; Stern, Frederic; Coy, David H. Center for Neurochemistry, Rockland Research Institute, Ward's Island, NY 10035 **Metabolism of potent enkephalin analogs (FK 33-824, D-A1a2, pentafluorophenylalanine-4-enkaphalinamide and a dimer of D-A1a2-enkephalin) and D-amino acid substituted derivatives of human beta-endorphin.** Brain Research Bulletin. 3(6):687-690, 1978.

New analogs of the opiate peptides containing novel substitutions were compared in terms of their metabolic stability in the presence of an ultrafiltrate of mouse brain. The enkephalin analog D-A1a2,MePhe4,Met-0-o15-enkephalin (FK33-824) was more stable at short incubation periods (30 minutes) than Met-enkephalin but less stable than D-A1a2-enkephalinamide at longer periods (180 minutes), as shown by the complete release of N-terminal Tyr. In contrast, D-A1a2-enkaphalinamide substi-

tuted in position 4 with pentafluorophenylalanine was completely stable at both time periods. A dimer of D-A1a2-enkephalin was relatively stable at short periods of incubation, but subject to 30% hydrolysis in terms of Tyr release at longer periods of incubation. A doubly substituted human beta-endorphin (D-Leu17,D-Lys29-beta-endorphin) showed greater stability than the native peptide, based on release of internal residues after incubation with the ultrafiltrate of brain. The presence of D-Leu17 blocked release of intermediate sized endorphins, but did not affect liberation of Tyr. The additional presence of D-Thr in position 6 of a triply substituted beta-endorphin (D-Thr6,D-Leu17,D-Lys29-beta-endorphin) did not affect liberation of Tyr, indicating that formation of gamma-endorphin (cleavage of Leu17-Phe) and of enkephalin (cleavage of Met5-Thr) need not occur before the action of brain peptides. Results demonstrate the feasibility of altering the resistance of analogs of enkephalin and endorphin to degradation by brain enzymes. 17 references. (Author abstract modified)

001243 Marshall, I.; Nasmyth, P. A.; Shepperson, N. B. Department of Biochemical & Experimental Pharmacology, St. Mary's Hospital Medical School, London W2 1PG, England **The effect of exogenous noradrenaline on the overflow of (3H)-noradrenaline from the mouse vas deferens.** British Journal of Pharmacology (London). 64(3):417P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effect of exogenous noradrenaline (NA) on the overflow of (3H)NA from the mouse vas deferens is reported. NA (3mcM) increased the fractional release of (3H)NA approximately fivefold during stimulation at 1 Hz and doubled the twitch response of the tissue. Yohimbine (128nM) added to the organ bath 2 minutes before the exogenous NA did not alter the increase in (3H)NA overflow, indicating that the increase was not related to an effect on presynaptic alpha-adrenoceptors. In the presence of an uptake blocking agent (cocaine, 10mcM), however, NA stimulated presynaptic alpha-adrenoceptors to produce a decrease in the fractional release of (3H)NA. These results support the view that stimulation of presynaptic alpha-adrenoceptors produces a change in the composition of the tritium overflow from this tissue. 3 references. (Author abstract modified)

001244 Martin, G. E.; Papp, N. L.; Bacino, C. B. Merck Institute for Therapeutic Research, West Point, PA 19486 **Contralateral turning evoked by the intranigral microinjection of muscimol and other GABA agonists.** Brain Research (Amsterdam). 155(2):297-312, 1978.

A study was conducted to determine 1) if intranigral administration of muscimol and other gamma-aminobutyric acid (GABA) agonists would cause a circling response in the rats, and 2) if it is possible to antagonize the effects of muscimol by the systemic and intranigral injection of GABA and dopamine (DA). Contraversive turning was evoked by the micorinjection of GABA agonists into the substantia nigra (SN) of female Sprague-Dawley rats. Muscimol, the most potent GABA agonist, evoked contralateral turning when injected into the SN in doses of 0.005, 0.05, 0.5, and 5mcg, but 0.5mcg muscimol applied at extranigral sites produced no turning. A shorter lived contraversive turning response was evoked by intranigral microinjection of imidazole acetic acid (10 or 50 microg), ethanolamine-O-sulphate (25 or 50 mcg), or GABA (50mcg). No increase in GABA induced turning was produced by local pretreatment with pipecolic acid (5 mcg). When injected into the SN, neither picrotoxin (0.1, 0.5, 1.0, or 2.0mcg) nor bicuculline methiodide (0.1, or 0.2microg) elicited a significant amount of turning. Picrotoxin partially blocked the turning evoked by intranigral injection of muscimol but bicuculline did not. Haloperidol (1mg/kg, intraperitoneally) antagonized muscimol induced turning. It is concluded that GABA mimetic substances injected into the SN may evoke contralateral turning via activation of a neural system arising from the SN or by activating the ipsilateral dopaminergic neurons projecting from the SN. 46 references. (Author abstract modified)

001245 Martres, Marie-Pascale; Baudry, Michel; Schwartz, Jean-Charles. Unite 109 de Neurobiologie, Centre Paul Broca de l'INSERM, 2ter, rue d'Alesia, F-75014 Paris, France **Characterization of 3H-domperidone binding on striatal dopamine receptors.** Life Sciences (Oxford). 23(17/18):1781-1784, 1978.

At the symposium, ""Receptors of Dopamine Antagonists: New Biochemical Approaches," held in Beerse, Belgium, July 1978, a paper on 3H-domperidone binding to striatal dopamine (DA) receptors was presented. Characterization studies indicate that 3H-domperidone binds in a saturable fashion to a membrane fraction from mouse striatum. The binding exhibits a high affinity, a low nonspecific binding, and other characteristics indicative of association with DA receptors. Kinetic analysis of rates of association and dissociation yielded dissociation constant values (0.7nM) in agreement with measurements at equilibrium (0.9dM). The relative potencies of various agonists and antagonists on the binding of 3H-domperidone parallel their pharmacological actions at DA receptor sites. 8 references. (Author abstract modified)

001246 Mason, Stephen T.; Fibiger, Hans C. Division of Neurological Sciences, Department of Psychiatry, University of British Columbia, Vancouver, British Columbia V6T 1W5, Canada **Kainic acid lesions of the striatum: behavioural sequalae similar to Huntington's chorea.** Brain Research (Amsterdam). 155(2):313-329, 1978.

Kainic acid (3M) was injected bilaterally into the dorsal striatum of male Woodlyn rats, producing virtually complete destruction of cell bodies in this structure without directly affecting the dopamine terminals ascending from the substantia nigra and terminating in the striatum. Other fibers of passage, such as the interal capsule, were also spared. The locomotor and stereotypy responses to amphetamine, a dopamine releasing agent, were consistently enhanced after this lesion, whereas responses to the direct receptor agonist apomorphine were not consistently affected. Results are interpreted in terms of a functional dichotomy between dorsal and ventral striatum and in terms of previously demonstrated electrophysiological alterations in the striatonigral feedback loop after kainic acid injection. Similarities to the effects of these drugs in human patients with Huntington's chorea strengthen the kainic acid model of this disease. 79 references. (Author abstract modified)

001247 Matsumiya, T.; Berry, J. N.; Bell, J. A. NIDA, Division of Research, Addiction Research Center, Lexington, KY **The effect of intraspinal microinjection of dopamine on the C-fiber reflex in the acute decerebrate spinal cat.** Life Sciences (Oxford). 24(13):1153-1158, 1979.

Microinjection of 10mcg dopamine into the ventral spinal cord gray matter of the L7 segment of the spinal cord facilitated the C-fiber reflex in decerebrate spinal cats, with a latency of 15 minutes. Microinjection of 10mcg norepinephrine also facilitated the C-fiber reflex, with a latency of only 2 minutes. Treatment with a dopamine-beta-hydroxylase inhibitor prevented the facilitatory effect of dopamine. Results indicate that microinjected dopamine facilitates C-fiber reflexes by serving as a precursor for norepinephrine. 16 references. (Author abstract modified)

001248 Maughan, George T.; Johnson, James H.; Rosecrans, John A. Department of Anatomy, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298 **Mid-**

brain raphe mediation of the narcotic blockade of ovulation. Brain Research (Amsterdam). 155(2):413-417, 1978.

The involvement of the midbrain raphe nuclei in the blockade of ovulation induced by morphine and methadone was studied in Sprague-Dawley rats. Intracranial injections of morphine (10mcg) into the dorsal or median raphe during the afternoon of proestrus resulted in blockade of ovulation in 29 of 35 experiments, while injection of methadone (20mcg) resulted in blockade of ovulation in only 8 of 23 animals. The effects of intracranial morphine were antagonized by subcutaneous administration of naltrexone, and intracranial injections of naltrexone antagonized the effects of subcutaneous morphine. Results suggest that the narcotic blockade of ovulation is mediated by the interaction of midbrain opiate receptors and the ascending serotonergic system. 13 references.

001249 McBride, W. J.; Rea, M. A.; Nadi, N. S. Department of Psychiatry, Indiana University School of Medicine, Indianapolis, IN 46202 **Effects of 3-acetylpyridine on the levels of several amino acids in different CNS regions of the rat.** Neurochemical Research. 3(6):793-801, 1978.

The effects of the nicotinamide antagonist 3-acetylpyridine (3-AP, 60-65mg/kg ip) on the levels of aspartate, glutamate, gamma-aminobutyric acid (GABA), taurine, glycine, and alanine in various brain regions of male Wistar rats were studied. In the first 4-7 days after injection, levels of glutamate, GABA, glycine, and alamine in the cerebellum were 10-30% higher in the 3-AP treated animals than in control rats; levels of these amino acids returned to normal between 14-21 days. The aspartate level in the cerebellum of 3-AP treated animals was normal for the first 7 days, but was reduced by 10-20% from days 14-28. The level of taurine in the cerebellum was 15-30% lower in the 3-AP group than in controls from days 7-28. The pattern of changes observed in the medulla in the first 7 days was similar to that found in the cerebellum. However, the level of aspartate in the medulla was unchanged by 3-AP from days 14-28, and the level of glutamate in the medulla remained elevated by 10-15% from days 14-28. The levels of taurine in the medulla were reduced by 10-15% from day 7-28 in 3-AP treated rats. The injection of 3-AP did not alter the levels of aspartate, glutamate, GABA, taurine, glycine, or alamine in the telencephalon on days 7, 14, 21, or 28 or in the diencephalon/mesencephalon on day 21 with respect to control levels. 16 references. (Author abstract modified)

001250 McBurney, Robert N.; Barker, Jeffery L. Laboratory of Neurophysiology, NINCDS, NIH, Bethesda, MD 20014 **GABA-induced conductance fluctuations in cultured spinal neurones.** Nature (London). 274(5671):596-597, 1978.

Fluctuation analysis was applied to the membrane current flow induced by the putative inhibitory amino acid transmitter, gamma-aminobutyric acid (GABA), in cultures of dissociated spinal cord (SC) neurons from 12-14-day-old mouse embryo spinal cords. Estimates of the conductance and duration of ion channels activated by GABA were made. The overall mean for 271 estimations of the conductance of a single channel activated by GABA for 12 SC neurons was 18.OpS. Results of spectral analysis on the fluctuations during the plateau phase of the current responses were consistent with the hypothesis that the fluctuations arise from a single population of channels whose duration is exponentially distributed. 12 references.

001251 McCandless, D. W.; Feussner, G. K.; Lust, W. D.; Passonneau, J. V. Department of Neurobiology and Anatomy, University of Texas Medical School, P. O. Box 20708, Houston, TX 77025 **Metabolite levels in brain following experimental seizures: the effects of maximal electroshock and phenytoin in cerebellar layers.** Journal of Neurochemistry (Oxford). 32(3):743-753, 1979.

The effects of maximal electroshock (MES) and phenytoin on metabolites and cyclic nucleotides in the molecular, Purkinje cell rich, granular, and white layers of the mouse cerebellum were examined. The four cerebellar layers had remarkably homogenous distributions of phosphocreatine (P-creatine), adenosine triphosphate (ATP), glucose, glycogen, lactate, gamma-aminobutyric acid (GABA), and the cyclic nucleotides. MES caused dramatic decreases in P-creatine, ATP and glucose at 10 seconds after treatment, followed by a decrease in glycogen at 30 seconds. Lactate levels were elevated and GABA was unchanged. Cyclic adenosine monophosphate (AMP) concentrations were increased at 10 seconds and cyclic guanosine monophosphate (GMP) at 30 seconds. Phenytoin modified most of the MES-induced changes in all the layers, but white matter was less affected by MES and phenytoin. Lactate concentrations were increased by MES and these effects were not altered by phenytoin. The most dramatic effects of phenytoin were on changes in cyclic nucleotides. Cyclic AMP concentrations were elevated after MES, but the values returned to normal more rapidly when phenytoin was present. The drug almost obliterated the MES-induced changes in cyclic GMP. The possible relationship of cyclic nucleotide concentrations and the modulation of seizure activity is discussed. 32 references. (Author abstract modified)

001252 McCandless, D. W.; Feussner, G. K.; Lust, W. D.; Passonneau, J. V. Department of Neurobiology and Anatomy, University of Texas Medical School, P. O. Box 20708, Houston, TX 77025 **Metabolite levels in brain following experimental seizures: the effects of isoniazid and sodium valproate in cerebellar and cerebral cortical layers.** Journal of Neurochemistry (Oxford). 32(3):755-760, 1979.

Levels of glucose, lactate, gamma-aminobutyric acid (GABA), and cyclic nucleotides were examined in discrete layers of the cerebellum and cerebral cortex of mice, following treatment with the convulsant isoniazid or the anticonvulsant sodium valproate. The concentrations of the metabolites were uniform among the layers of each region in both control and drug treated mice. Isoniazid had only minimal effects on glucose and lactate, two markers of energy status in the brain. However, GABA levels in cerebellar layers were depressed and cyclic nucleotide levels were elevated in both regions 30 minutes after isoniazid (prior to convulsion). At the onset of seizures, the reduction of GABA and the elevation of cyclic adenosine monophosphate in both regions was more pronounced than during the preconvulsive state. The concentration of cyclic guanosine monophosphate (GMP) remained elevated in cerebellar layers at the onset of seizures, but the cyclic GMP level in cerebral cortex returned to control values. Valproate elevated GABA in all layers of both regions and decreased the cyclic GMP in the cerebellar layers. In general, valproate dampened the changes in metabolites induced by isoniazid. 10 references. (Author abstract modified)

001253 McGeer, E. G.; McGeer, P. L. Dept. of Psychiatry, University of British Columbia, Vancouver, British Columbia V6T 1W5, Canada **Some factors influencing the neurotoxicity of intrastriatal injections of kainic acid.** Neurochemical Research. 3(4):501-517, 1978.

Factors that influence the amount of damage caused by intrastriatal injections of kainic acid were investigated in male Wistar rats. Using choline acetyltransferase (CAT) and glutamic acid decarboxylase (GAD) as indices of neuronal loss, the neurotoxicity of small doses of kainic acid was found to be influenced by injection time and volume. The effect of kainic acid was partly

blocked by coinjection of some but not all glutamate antagonists and by prior lesioning of the corticostriatal tracts. Other adjuvants, drugs, or lesions tested had little modifying effect, except that changes in the dopaminergic system seemed to increase the toxicity toward cholinergic but not gamma-aminobutyric acid mediated systems. High affinity glutamate accumulation by neostriatal synaptosomes was significantly increased 1-7 days following kainic acid injections. Monoamine oxidase and acetylcholinesterase activities were depressed in kainic acid lesioned striata, but not nearly as much as were CAT and GAD. An indirect mechanism involving glutamate release and inhibition of reuptake is suggested for kainic acid neurotoxicity. 31 references. (Author abstract modified)

001254 McMillen, Brain A.; Shore, Parkhurst A. Department of Pharmacology, University of Texas Health Science Center, Dallas, TX 75235 **Comparative effects of clozapine and alpha-adrenoceptor blocking drugs on regional noradrenaline metabolism in rat brain.** European Journal of Pharmacology (Amsterdam). 52(2):225-230, 1978.

The effects of clozapine, phenoxybenzamine, and other alpha-receptor agonists on noradrenaline (NA) metabolism in female Sprague-Dawley rat brain were determined by measuring regional concentrations of the NA metabolite 3-methoxy-4-hydroxyphenylglycol sulfate. Clozapine increased NA metabolism in brain regions characterized by a predominance of alpha-receptors (hypothalamus, medulla, midbrain, and cortex), but not in those where beta-receptors are predominant (striatum and cerebellum). Phenoxybenzamine had a stronger effect in the hypothalamus than clozapine but the effect of phenoxybenzamine on NA metabolism was delayed, possibly as a result of poor affinity for some central receptors or a slow rate of entry into certain brain regions. Thioridazine and the benzodioxane, dibozane, had regional effects similar to those of clozapine. The similarity between clozapine and dibozane may reflect a preference for presynaptic alpha-receptors. It is suggested that clozapine and other atypical antipsychotic drugs act on multiple neurotransmitter systems. 22 references. (Author abstract modified)

001255 Melchior, C. L.; Simpson, C. W.; Myers, R. D. Department of Pharmacology, University of Colorado Medical Center, Denver, CO 80262 **Dopamine release within forebrain sites perfused with tetrahydroisoquinolines or tryptoline in the rat.** Brain Research Bulletin. 3(6):631-634, 1978.

The localized effect of amine/aldehyde condensation products on the endogenous release of dopamine (DA) was examined in DA rich areas of male Sprague-Dawley or Wistar rat brain. In unanesthetized animals, dopaminergic stores were labeled with 14C-DA (1.0mcCi) microinjected in a volume of 1.0mcl into the caudate nucleus, tuberculum olfactorium, nucleus accumbens, or other contiguous sites within the ventral forebrain. Subsequently, each labeled site was locally perfused with artificial cerebrospinal fluid. Two tetraisoquinolines, tetrahydropapaveroline and 4,6,7-TH-tetrahydroisoquinoline, as well as the tetrahydro-beta-carboline, tryptoline, significasntly enhanced the release of 14C-DA when perfused at 250ng/minute. Tetrahydroisoquinoline had no effect on the local kinetics of 14C-DA, and salsolinol had an intermediate effect on DA release. Results suggest that an alkaloid conjugate, administered into the cerebral ventricle, may exert its central effects via a dopaminergic mechanism in the telencephalon. 27 references. (Author abstract modified)

001256 Meltzer, H. Y.; Fessler, R. G.; Fang, V. S. Department of Psychiatry, University of Chicago, Pritzker School of Medicine, Chicago, IL 60637 **Effect of piperoxan on rat plasma prolactin.** Communications in Psychopharmacology. 2(3):237-242, 1978.

Conflicting results as to whether drugs which affect noradrenergic mechanisms affect rat prolactin secretion were investigated. Piperoxan, an alpha-adrenergic receptor blocker, and clonidine, an alpha-adrenergic agonist, did not significantly affect prolactin secretion in male rats. The piperoxan results do not support a previous report which suggests that this agent may have antipsychotic action based on its ability to stimulate prolactin secretion in nonhuman primates. 34 references. (Author abstract modified)

001257 Meltzer, H. Y.; Simonovic, M.; Fang, V. S. Department of Psychiatry, University of Chicago Pritzker School of Medicine, Chicago, IL 60637 **The effect of muscimol on prolactin secretion in male rats.** Communications in Psychopharmacology. 2(3):231-236, 1978.

To further clarify the conflicting reports on the effect of gamma-aminobutyric acid (GABA) on prolactin (PRL) secretion, the effect of a potent, centrally active GABA receptor agonist (muscimol) on basal and pharmacologically elevated plasma PRL levels was examined in male rats. Intravenous administration of muscimol (0.5-5.0mg/kg doses) produced no change in resting plasma PRL levels 15 and 30 minutes after administration. In animals pretreated with alpha-methylparatyrosine (100mg/kg i.p.), muscimol (0.1-1.0mg/kg i.v.)produced significant decreases in plasma PRL concentrations. Muscimol (5.0mg/kg, i.p.)also significantly inhibited PRL secretion in rats pretreated with haloperidol (1.0mg/kg, i.p.). This effect of muscimol is probably due to its ability to activate central GABA receptors. 22 references. (Author abstract)

001258 Meltzer, Herbert Y.; Simonovic, Miljana; Fessler, Richard G. Dept. of Psychiatry, University of Chicago Pritzker School of Medicine, Chicago, IL **Neuropharmacological studies of prolactin secretion.** Psychopharmacology Bulletin. 14(4):26-29, 1978.

In a paper presented at the session on neuropeptides of psychiatric interest at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, neuropharmacological studies of prolactin secretion are described. It is noted that: 1) prolactin secretion from the pituitary is inhibited by dopamine synthesized in the tubero-infundibular dopamine neurons which release dopamine into the pituitary portal circulation, 2) clozapine did not increase morning serum prolactin levels in 13 psychiatric patients, 3) GABA can markedly inhibit the increase in rat plasma prolactin produced by neuroleptics or AMPT, and 4) imipramine, desimipramine, chlorimipramine, and fluoxetine markedly potentiated the effects of both 5-HT and 5-HTP on plasma prolactin. 8 references.

001259 Messiha, F. S. Department of Pathology, Texas Tech University School of Medicine, Lubbock, TX 79409 **d-Amphetamine and ethanol: a drug-drug interaction study.** Brain Research Bulletin. 3(6):595-599, 1978.

The effects of d-amphetamine on the specific activities of endogenous liver alcohol dehydrogenase (L-ADH) and liver aldehydehyde dehydrogenase (L-ALDH) were studied using male Sprague-Dawley rat and mouse liver enzyme preparations. Rat and mouse L-ALDH was noncompetitively inhibited by d-amphetamine (0.0001M) in vitro. Mitochondrial L-ALDH was not affected by d-amphetamine in vivo or in vitro in either species. Injection of 4mg/kg i.p. d-amphetamine produced a noncompetitive inhibition of mouse L-ADH, but had no significant effect on rat L-ADH specific activity. Mice pretreated with 3.5mg/kg i.p. d-amphetamine 30 minutes prior to a single injection of 25% ethanol solution (2.5g/kg i.p.)showed a significant decrease in their blood and brain content of exogenous administered ethanol

for 60-90 minutes after ethanol administration. Results show species differences in d-amphetamine action on liver enzymes and indicate that d-amphetamine can interfere with the metabolism of ethanol. 38 references. (Author abstract modified)

001260 Meyerson, Laurence R.; Fuller, Ray W. Neurochemistry and Addiction Research Laboratory, VA Hospital, Houston, TX 77211 **Effect of beta-fluorophenethylamine analogs on monoamine oxidase substrate preference.** Research Communications in Chemical Pathology and Pharmacology. 21(3):581-584, 1978.

A new potentiometric assay was employed to evaluate the effects of beta-fluorination of phenethylamine (PEA) on rat brain monoamine oxidase (MAO) substrate preference. Through the use of the substrate selective MAO inhibitors clorgyline (type A) and deprenyl (type B), monofluro-PEA and difluro-PEA were found to be preferred substrates for MAO type B. It is suggested that the protonated form of PEA and its respective mono and difluro analogs are the preferred substrate forms for catalysis by brain MAO. 7 references. (Author abstract modified)

001261 Michelot, R.; Leviel, V.; Giorguieff-Chesselet, M. F.; Cheramy, A.; Glowinski, J. Groupe NB, INSERM U. 114, College de France, F-75231 Paris cedex 05, France **Effects of the unilateral nigral modulation of substance P transmission on the activity of the two nigro-striatal dopaminergic pathways.** Life Sciences (Oxford). 24(8):715-723, 1979.

The effects of the unilateral application of substance P, the 4-11 sequence of substance P, luteinizing hormone releasing hormone (LHRH), and antibodies against substance P on the release of tritiated dopamine (3H-DA) in the caudate nuclei (CN) and substantia nigrae (SN) were examined in halothane anesthetized cats. Unilateral nigral application of substance P or its 4-11 sequence stimulated 3H-DA release in the ipsilateral CN and reduced 3H-DA release from dendrites in the SN; unilateral application of antibodies against substance P had the opposite effect (decreased release of 3H-DA from nerve terminals and increased 3H-DA release from dendrites). Substance P, 4-11 substance P, and antibodies to substance P all failed to affect release of 3H-DA from nerve terminals and dendrites of the contralateral dopaminergic neurons. LHRH had no effect on ipsilateral or contralateral dopaminergic neurons. Results are discussed in relation to previous studies of the effects of dopaminergic, gamma-aminobutyric acid mediated and glycinergic agonists and antagonists on dopaminergic nigrostriatal pathways. 30 references. (Author abstract modified)

001262 Millington, William R.; McCall, Anthony L.; Wurtman, Richard J. Laboratory of Neuroendrocrine Regulation, Massachusetts Institute of Technology, Cambridge, MA 02139 **Lithium and brain choline levels.** New England Journal of Medicine. 300(4):196-197, 1979.

Research is reported which indicates that chronic lithium treatment predominantly impairs brain choline efflux. Choline influx into the brain was also reduced in rats given lithium chronically. However, it is surmised that lithium's effect on choline efflux from the brain is even greater than its effect on choline influx. Additional observations indicate that the effects of lithium and other agents on choline transport across the blood-brain barrier may not be well demonstrated in rat erythrocytes. Since lithium stimulates brain acetylcholine synthesis, it is suggested that it may be useful to combine lithium and choline (or lecithin) for the treatment of mania and related disorders. 10 references.

001263 Minegishi, Akemi; Satoh, Tetsuo; Fukumori, Ryuji; Kitagawa, Haruo; Yanaura, Saizo. Dept. of Biochemical Pharmacology, Faculty of Pharmaceutical Sciences, Chiba University, Chiba, Japan **Susceptibility to brain aldehyde metabolizing enzymes to pargyline, disulfiram and diethylmaleate in vivo in rats.** Life Sciences (Oxford). 24(12):1131-1135, 1979.

The in vivo susceptibility of mitochondrial (m) and soluble (s) aldehyde dehydrogenase (AIDH) and aldehyde reductase (AIR) to pargyline, diethylmaleate, and disulfiram was studied in male Wistar rat brain. With all compounds tested, m-AIDH was inhibited to a significantly greater degree by low substrate concentration (50mcM) than by high substrate concentration (3.3mM). Little or no inhibition of s-AIDH and AIR was observed. These findings suggest that there are at least two forms of AIDH and that they have different susceptibilities to AIDH inhibitors. 12 references. (Author abstract modified)

001264 Moguilewsky, Martine; Raynaud, Jean-Pierre. Department of Biology, Centre de Recherches Roussel Uclaf, F-93230 Romainville, France **Estrogen-sensitive progestin-binding sites in the female rat brain and pituitary.** Brain Research (Amsterdam). 164:165-175, 1979.

Properties of the cytoplasmic progestin receptor were studied in the hypothalamus, cortex, pituitary, and uterus of the estrogen primed castrated adult Sprague-Dawley female rat, using the highly potent progestin, promegestone. In sucrose density gradients, the promegestone/progestin receptor complex sedimented with a coefficient of about 6 to 7S. Promegestone bound to the progestin receptor with an intrinsic dissociation constant of about 0.000000001M, as measured by a Dextran coated charcoal technique; the number of binding sites differed widely. Only progestins competed for tritiated promegestone binding. In both immature and castrated adult rats, estrogen administration increased the number of promegestone specific binding sites in the uterus, pituitary and hypothalamus, but not in the amygdala, hippocampus, or cortex. The increase was maximal between 40 and 48 hours after priming with the potent estrogen, moxestrol, and could not be induced by androgens or progestins. 26 references. (Author abstract modified)

001265 Montarolo, Pier Giorgio; Raschi, Federico; Strata, Piergiorgio. Instituto di Fisiologia Umana dell Universita, I-10126 Torino, Italy **Interactions between benzodiazepines and GABA in the cerebellar cortex.** Brain Research (Amsterdam). 162(2):358-362, 1979.

The interaction of benzodiazepines and gamma-aminobutyric acid (GABA) at the inhibitory synapse between basket cells and Purkinje cells in the cerebellar cortex was investigated in anesthetized or decerebrate cats. Intravenous injection of diazepam (1-10mg/kg) did not depress the inhibitory action of basket cells on Purkinje cells, suggesting that diazepam does not act as a GABA antagonist. On the contrary, diazepam appeared to potentiate basket cell inhibition, supporting the assumption that benzodiazepines potentiate the inhibitory synapses mediated by GABA. 16 references.

001266 Morgan, William W.; Pfeil, Karla A. Department of Anatomy, University of Texas Health Science Center, 7703 Floyd Curl Drive, San Antonio, TX 78284 **Mecamylamine blockade of nicotine enhanced noradrenaline turnover in rat brain.** Life Sciences (Oxford). 24(5):417-420, 1979.

The administration of nicotine significantly enhanced the depletion of noradrenaline (NA) observed in the brains of male Sprague-Dawley rats following alpha-methyl-para-tyrosine administration. This nicotine-induced enhancement of NA turnover in brain was blocked by mecamylamine, but mecamylamine alone had no effect on NA turnover. Results indicate that mecamylamine acts as a nicotinic antagonist in rat brain. 10 references. (Author abstract modified)

001267 Morian, A.; Leonard, B. E. Department of Pharmacology, University College, Galway, Ireland **Social isolation in the young rat: neurochemical effects of treatment with a long-acting neuroleptic, alpha-flupenthixol decanoate.** British Journal of Pharmacology (London). 64(3):379P-380P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the neurochemical effects of chronic treatment with alpha-flupenthixol decanoate (aFPD) in socially isolated young male Wistar rats are reported. In the amygdala, aFPD caused a significant decrease in steady state concentrations of gamma-aminobutyric acid (GABA) and an increase in noradrenaline (NA). In the striatum, there was a significant drug/environment interaction effect for GABA, due to an increased concentration in isolates after aFPD treatment. No change in dopamine (DA) concentration was found in the midbrain, corpus striatum, hippocampus, or amygdala. Results suggest that aFPD exerts its antagonistic action on GABA and NA in the amygdala without affecting the concentrations of striatal DA; the lack of effect on striatal DA suggests that social isolation alters DA receptor sensitivity to aFPD. 6 references. (Author abstract modified)

001268 Morley, Barbara J.; Kemp, George E.; Salvaterra, Paul. Neurosciences Program, University of Alabama Medical School, Birmingham, AL 35294 **Alpha-bungarotoxin binding sites in the CNS.** Life Sciences (Oxford). 24(10):859-872, 1979.

The use of the neurotoxin alpha-bungarotoxin (BuTX) as a specific and irreversible ligand for nicotinic acetylcholine receptors (nAChR) in the CNS is discussed. The BuTX binding sites in the CNS have biochemical properties similar to muscle, show a distribution similar to that of other cholinergic markers, and bind to postsynaptic membranes. However, studies of ganglionic neurons, cultured sympathetic ganglion cells, and the PC12 cell culture line have raised questions regarding the use of BuTX as an nAChR ligand in the CNS. Differences between CNS and skeletal muscle BuTX sites suggest important differences in the localization, function, and structure of various nAChRs. BuTX may not be useful in electrophysiological studies in some brain areas, but it serves as a useful probe for the presence of nAChRs and as a specific marker for cholinoceptive neurons when studied in conjunction with other cholinergic macromolecules. 122 references. (Author abstract modified)

001269 Mormede, P.; Dantzer, R. Station de Pharmacologie-Toxicologie, I.N.R.A., Toulouse, France /**Action of diazepam on conditioned fear in the pig.**/ Action du diazepam sur la peur conditionnee chez le porc. Psychologie Francaise (Paris). 23(1):61-67, 1978.

The emotional behavior of pigs and the influence of diazepam was studied in 16 piglets. Ss were trained to avoid electric shock administered between the shoulders. After nine sessions of conditioning, aural signals were presented prior to shock. The following day the conditioned stimulus was presented. Valium was administered before the conditioning session and/or before the test session. Plasmatic corticosteroids were precipitated from the animals' blood. Results indicate that the pavlovian conditioning caused a doubling of the plasmatic corticosteroids; however the response was reduced by the diazepam. Suprarenal responses to the test session were also reduced by diazepam. 14 references.

001270 Muller, Walter E.; Schlafer, Uwe; Wollert, Uwe. Pharmakologisches Institut der Universitat Mainz, Obere Zahlbacher Strasse 67, D-6500 Mainz, Germany **Benzodiazepine receptor binding: the interactions of some non-benzodiazepine drugs with specific (3H)diazepam binding to rat brain synaptosomal membranes.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 305(1):23-26, 1978.

The interaction of several nonbenzodiazepine drugs with labeled diazepam binding to benzodiazepine receptors in rat brain synaptosomal membranes was investigated. Baclofen, benzoctamine, hydroxyzine, chlorpromazine, haloperidol, imipramine, and amitriptyline displace specific labeled diazepam bindings, but the concentrations needed are too high to explain pharmacological effects of these drugs by an interaction with benzodiazepine receptors. The most potent nonbenzodiazepine drug for inhibiting specific labeled diazepam binding was methaqualone. It is suggested that interactions with benzodiazepine receptors may account for the anxiolytic and anticonvulsive side-effects of this drug. 25 references. (Author abstract modified)

001271 Myers, R. D.; Hoch, D. B. Department of Psychiatry, University of North Carolina, School of Medicine, Chapel Hill, NC 27514 **14C-Dopamine microinjected into the brain-stem of the rat: dispersion kinetics, site content and functional dose.** Brain Research Bulletin. 3(6):601-609, 1978.

A morphological study of the dispersion characteristics and tisue content of dopamine (DA) microinjected acutely into the brainstem of anesthetized rats was performed. Regardless of volume, the spatial patter¯ing of microinjected 14C-DA assumed a tear drop or pear shape rather than a sphere. As the volume of injection was increased from 0.5to 8.0mcl, the magnitude of the dispersion of 14C-DA was enhanced throughout the surrounding parenchyma, but not in a linear fashion. As the microinjection volume increased, the radioactivity detectable in tissue was progressively elevated, but approached a ceiling concentration, suggestion that a physiochemical saturation level exists for DA in rat brainstem. The actual nanogram content of DA detected in the injection site 1 minute after the microinjection declined from a level of 3% of the amount infused in the 0.5mcl volume to a value of only 1% of the DA contained in the largest injected volume, 8.0mcl. Methodological problems involved in the use of a microinjection volume in excess of 0.5mcl in studies in rats involving putative neurotransmitters or neurotoxins are discussed. 36 references. (Author abstract modified)

001272 Nagy, Julia; Decsi, L. Institute of Pharmacology, University Medical School, H-7643 Pecs, Hungary **Further studies on the site of action of diazepam: anticonvulsant effect in the rabbit.** Neuropharmacology (Oxford). 18(1):39-45, 1979.

The site of the anticonvulsant action of diazepam was studied via direct intracerebral chemostimulation in conscious, New Zealand white rabbits with chronically implanted cannulae and recording electrodes. Application of diazepam in the anterior amygdaloid nucleus (AA) produced a dose related, reversible elcvation of the pentylenetrazol (PTZ) threshold for appearance of spike activity in the EEG. Injections of diazepam into the basal amygdaloid nucleus or dorsal hippocampus (DH) had no effect on PTZ threshold, and phenobarbital was ineffective at all three sites. The threshold of amygdalophippocampal after discharges was elevated after application of diazepam in the AA, but not after injection in the DH. Hippocampal/amygdaloid afterdischarges were not influenced by diazepam injected into the AA or DH. Results indicate that the amygdaloid nucleus, particularly its anterior part, plays a crucial role in the anticonvulsant effect of diazepam in the rabbit. 23 references. (Author abstract modified)

001273 Nakanishi, Hironori; Kaneko, Motohisa. Department of Pharmacology, Fukushima Medical College, Fukushima, 960, Japan **Is thioridazine-induced ejaculation failure peripheral in**

origin? Research Communications in Chemical Pathology and Pharmacology. 19(3):549-552, 1978.

The effects of thioridazine (THI), chlorpromazine (CPZ), and phenoxybenzamine (PBZ) on the contractile response of rabbit vas deferens to the intramural nerve stimulation were examined. The contractile response was almost equally depressed by THI and CPZ. PBZ in a dose of .000001g/ml augmented the response slightly. The contractile response to exogenously administered noradrenaline was remarkably depressed by THI and CPZ and completely abolished by PBZ. Almost equal potencies of sympatholytic effects of THI and CPZ may exclude the possibility that THI ejaculation failure is due to its inhibitory action on the peripheral adrenergic mechanism. 6 references. (Author abstract modified)

001274 Nemeth, E. F.; Cooper, J. R. Department of Pharmacology, Yale University School of Medicine, New Haven, CT 06510 **Effect of somatostatin on acetylcholine release from rat hippocampal synaptosomes.** Brain Research (Amsterdam). 165(1):166-170, 1979.

The effect of somatostatin (somatotropin release inhibiting factor, SRIF) on the release of acetylcholine (ACh) from male Sprague-Dawley rat hippocampal synaptosomes was investigated. Physiological concentrations of SRIF had no effect on spontaneous or potassium evoked release of (3H)ACh. High concentrations of SRIF enhanced release of (3H)ACh, but this enhanced release was calcium independent and accompanied by an efflux of lactate dehydrogenase, indicating that the effect was nonspecific and possibly the result of membrane damage. These findings suggest that the presumptive postsynaptic effects of SRIF, at least in the hippocampus, are not mediated via presynaptic release of ACh. 15 references.

001275 Ngai, S. R. .H. Shirasawa; Cheney, D.L. Department of Anesthesiology, Columbia University College of Physicians and Surgeons, New York, NY 10032 **Changes in motor activity and acetylcholine turnover in brain regions of rats injected with lidocaine and cocaine. (Unpublished paper)** Bethesda, MD, NIMH, 1978. 19 p.

A study to determine whether the behavioral changes elicited during anesthesia with lidocaine and cocaine can be correlated with changes in acetylcholine turnover rates (utilization) is described. In rats, lidocaine induces sedation. Similar doses of cocaine increased motor activity 12 fold, compared with rats injected with saline. These effects lasted for up to 90 minutes. To measure acetylcholine turnover rate deuterated phosphorylcholine was infused intravenously for 9 minutes beginning 30 minutes after subcutaneous injections of saline, lidocaine, or cocaine. Rats were then killed by microwave irradiation focussed to the head. Acetylcholine and choline concentrations in several brain structures were measured by gas chromatography/mass fragmentography. Principles of steady state efflux and turnover rate of acetylcholine from changes with time in the incorporation of deuterium into choline and acetylcholine. Lidocaine and cocaine did not change the steady state concentrations of acetylcholine or choline. Lidocaine decreased the acetylcholine turnover rate in the cerebral cortex; whereas cocaine increased the acetylcholine turnover rate in the cerebral cortex and the diencephalon, but not in the caudate nucleus or the hippocampus. It is suggested that the dissimilar behavioral effects induced by the local anesthetics lidocaine and cocaine may be associated with opposite changes in acetylcholine utilization in cortex of rat brain. 24 references. (Author abstract modified)

001276 Nicoll, R. A.; Iwamoto, E. T. Department of Pharmacology, University of California, San Francisco, CA 94143 **Action of pentobarbital on sympathetic ganglion cells.** Journal of Neurophysiology. 41(4):977-986,1978.

Sympathetic ganglia of the lumbar chain of frogs were used to analyze the effect of pentobarbital on ganglionic transmission. Anesthetic concentrations of pentobarbital selectively blocked the fast excitatory postsynaptic potential. It is concluded that the pentobarbital induced blockade of ganglionic transmission is solely mediated by a postsynaptic action. 43 references. (Author abstract modified)

001277 Nikolov, Rumen; Leniger-Follert, Elfriede. Chemical Pharmaceutical Research Institute, ul. Jelyo Voivoda 1-A, BG-1156 Sofia, Bulgaria **The effect of papaverine on local tissue PO2 and microflow in cat brain cortex.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 305(2):149-154, 1978.

The effect of intracarotid and intravenous administration of papaverine on local tissue oxygen partial pressure (P02) and microflow in cat brain cortex was studied. Continuous intracarotid infusions of papaverine distinctly increased local tissue P02 and microcirculation of the brain surface, with only slight changes in systemic arterial pressure. The duration of the effect increased with increases in the duration and dose of infusion. The maximum duration was observed with 5 minute infusions and lasted for 10-15 minutes after the infusion was discontinued. In travenous influsions of papaverine had less pronounced effects on tisssue P02 and microflow than intracarotid infusions. No redistribution of capillary flow was observed. 22 references. (Author abstract modified)

001278 Nimitkitpaisan, Yuthasak; Skolnick, Phil. Lab. of Biopsychosocial Research, Nat'l Inst. of Alcohol Abuse and Alcoholism, ADAMHA, 12501 Washington Ave., Rockville, MD 20852 **Catecholamine receptors and cyclic AMP formation in the central nervous system: effects of tetrahydroisoquinoline derivatives.** Life Sciences. 23(4):375-382, 1978.

Tetrahydroisoquinoline (THIQ) alkaloids were studied for their ability to inhibit the binding of radioligands to catecholamine receptors in the rat CNS. The compound (plus or minus) tetrahydropapaveroline (THP) was the most potent inhibitor of (3H)dihydroalprenolol binding to beta-adrenergic receptors and of (3H)haloperidol to dopaminergic receptors. It was the least potent inhibitor of (3H)WB-4101 binding to alpha-adrenergic receptors. Other THIQ alkaloids such as salsoline, salsolinol, and reticuline were less potent in inhibiting radioligand binding to beta-adrenergic and dopaminergic receptors and were more potent in inhibiting radioligand to alpha-adrenergic receptors. The marked potency of (plus or minus) THP in inhibiting radioligand binding to beta adrenergic receptors was confirmed by its potency in inhibiting (-) isoproternol elicited accumulations of cyclic AMP in brain slice preparations. These data indicate that, if formed in vivo during alcohol consumption, THIQ derivatives such as THP may affect catecholamine neurons in the CNS. 29 references. (Author abstract modified)

001279 North, R. Alan; Katayama, Yoshifumi; Williams, John T. Neurophysiology Laboratory, Department of Pharmacology, Loyola University Stritch School of Medicine, Maywood, IL 60153 **On the mechanism and site of action of enkephalin on single myenteric neurons.** Brain Research (Amsterdam). 165(1):67-77, 1979.

Intracellular recordings were made from neurons in the isolated myenteric plexus of the guinea-pig ileum following application of methionine enkephalin or leucin enkephalin. When applied in the perfusion solution, enkephalin (1nM-1mcM) hyperpolarized the soma membrane of less than half the neurons. The hyperpolarization was of rapid onset and reversed fully when the enkephalin was washed out; in some of the cells, the hyper-

polarization was associated with a fall in neuronal input resistance. This hyperpolarization was reversed or prevented by naloxone. When applied by iontophoresis to the soma membrane, enkephalin never hyperpolarized the myenteric neurons. Hyperpolarization in response to iontophoretic application of enkephalin was observed only when enkephalin was applied to the surface of the ganglion away from the soma membrane; such hyperpolarization was prevented by addition of naloxone to the perfusion solution. Results indicate that the site at which enkephalin causes the naloxone reversible hyperpolarization is not the soma membrane. The possibility that enkephalin causes presynaptic inhibition in this preparation by hyperpolarizing or increasing the conductance of sites on the cellular processes that release acetylcholine is discussed. 43 references. (Author abstract modified)

001280 Ogren, S. O.; Hall, H.; Kohler, C. Research and Development Laboratories, Astra Lakemedel AB, Sodertalje, Sweden **Studies on the stereoselective dopamine receptor blockade in the rat brain by rigid spiro amines.** Life Sciences (Oxford). 23(17/18):1769-1773, 1978.

At the symposium, ""Receptors of Dopamine Antagonists: New Biochemical Approaches," held in Beerse, Belgium, July 1978, a paper was presented with evidence for stereospecific dopamine (DA) receptor blockage by rigid spiro amines. Two series of tetracyclic spiro amines (racemates and enantiomers) were found to exhibit stereoselective effects on (3H)spiroperidol binding and on apomorphine induced behaviors in rats. Of the four enantiomers of the spiro amines, only one (cis-(-)) showed a high potency (higher than that of chlorpromazine, clozapine, and sulpiride). Sulpiride was a weak inhibitor of (3H)spiroperidol binding and was less active in limbic areas than in the striatum. The potencies of the spiro amines and of chlorpromazine and clozapine in displacing (3H)spiroperidol in the striatum and limbic DA system correlated closely with their potencies in inhibiting apomorphine induced stereotypies and hyperactivity. 19 references. (Author abstract modified)

001281 Oka, Tetsuo; Sawa, Aiko. Department of Pharmacology, School of Medicine, Tokai University, Isehara, Kanagawa 259-11, Japan **Calcium requirements for electrically-induced release of an endogenous opiate receptor ligand from the guinea-pig ileum.** British Journal of Pharmacology (London). 65(1):3-5, 1979.

Calcium requirements for electrically-induced release of an endogenous opiate receptor ligand in the myenteric plexus longitudinal muscle strip of the guinea-pig ileum were studied. The naloxone reversible depression of the electrically evoked contraction caused by stimulation at 10Hz in normal Krebs solution was markedly reduced by decreasing the calcium concentration in the solution. The depression was greatly diminished by increasing the magnesium concentration in the solution. These results show that the electrically-induced release of an opiate-like material requires calcium ions. 9 references. (Author abstract)

001282 Okada, Yasuhiro; Saito, Mitsuo. Department of Neurochemistry and Medical Chemistry, Tokyo Metropolitan Institute for Neurosciences, Fuchushi, Tokyo 183, Japan **Inhibitory action of adenosine, 5-HT (serotonin) and GABA (gamma-aminobutyric acid) on the postsynaptic potential (PSP) of slices from olfactory cortex and superior colliculus in correlation to the level of cyclic AMP.** Brain Research (Amsterdam). 160(2):368-371, 1979.

The effects of adenosine, 5-hydroxytryptamine (5-HT), and gamma-aminobutyric acid (GABA) on the levels of cyclic adenosine monophosphate (AMP) and the postsynaptic potential (PSP) of slices from the olfactory cortex and superior colliculus of guinea-pigs were investigated. Adenosine distinctly increased the level of cyclic AMP in slices from olfactory cortex and superior colliculus, but depressed the PSP only in the olfactory cortex slice. GABA and 5-HT had no effect on the level of cyclic AMP in either slice, but distinctly depressed the PSP of the superior colliculus slice. It is suggested that there may be two types of adenosine sensitive receptors at extracellular sites, one of which relates to the formation of cyclic AMP and the other to the depressant effect of PSP. 16 references.

001283 Oke, Arvin; Keller, Richard; Mefford, Ivan; Adams, Ralph N. Department of Chemistry, University of Kansas, Lawrence, KS 66045 **Lateralization of norepinephrine in human thalamus.** Science. 200(4348):1411-1413, 1978.

Evidence is reported of a significant, naturally occurring lateralization in the distribution of a neurotransmitter system in the human brain. The concentrations of norepinephrine, dopamine, epinephrine, and ascorbic acid in brain tissue samples were analyzed through recently developed assay procedures. Norepinephrine had a strongly lateralized distribution in the human thalamus. In the pulvinar region the left hemisphere was rich in norepinephrine, whereas in the somatosensory input areas the right hemisphere had a higher concentration of this catecholamine. It is concluded that such naturally occurring left/right differences in concentration of a neurotransmitter represent a new aspect of hemispheric specialization. Results also suggest that norepinephriae mediation may be involved with lateralized neuropsychological disfunction in schizophrenia disorders. 20 references. (Author abstract modified)

001284 Osorio, I.; Hackman, J. C.; Davidoff, R. A. Neurology Service, Veterans Administration Hospital, Miami, FL 33101 **GABA or potassium: which mediates primary afferent depolarization?** Brain Research (Amsterdam). 161(1):183-186, 1979.

The effects of picrotoxin and bicuculline on the depolarization of afferent fibers produced by elevated potassium levels were investigated in vitro, using the isolated frog spinal cord. Concentrations of picrotoxin and bicuculline strong enough to attenuate the depolarizing effects of gamma-aminobutyric acid (GABA) did not alter the sensitivity of primary afferents to the depolarizing effects of potassium. Since bicuculline and picrotoxin are known antagonists of GABA activity at other synaptic sites, the most likely explanation of their ability to block primary afferent depolarization (PAD) rests on their ability to exert the same antagonistic activity at a GABA receptor located on primary afferent terminals. These data thus favor the hypothesis that at least part of PAD is a synaptic process produced by the action of GABA. 25 references.

001285 Palmer, Gene C.; Palmer, S. Jo. Department of Pharmacology, University of South Alabama College of Medicine, Mobile, AL **5'guanylyl-imidodiphosphate actions on adenylate cyclase in homogenates of rat cerebral cortex plus neuronal and capillary fractions.** Life Sciences. 23(3):207-216, 1978.

The role of neurohumoral agents in stimulating adenylate cyclase in total homogenates, as well as in neuronal, and capillary enriched fractions of the rat cerebral cortex was examined, along with the ability of the guanosine triphosphate (GTP) analog, Gpp(NH)p, to enhance the actions of these neurohumoral agents. It was found that norepinephrine (NE) isoproterenol, dopamine (DA), apomorphine, histamine, 4-Me-histamine, and prostaglandins E1, E2, and A2 have the stimulating effect. The enzyme in homogenates of isolated cortical neurons is likewise sensitive to NE, isoproterenol, DA, apomorphine, histamine, 2-Me-histamine, 4-Me-histamine, and prostaglandin F2 alpha. Capillary enriched fractions from the cortex possess an enzyme that is activated by NE, isoproterenol, and DA. Addition of Gpp(NH)p to the cortical homogenates and neuronal

fractions enhances enzyme responses to NE, isoproterenol, DA, 2-Me-histamine, 4-ME-histamine, and the prostaglandins E1 and E2. The sensitivity of the catecholamine induced adenylate cyclase activation in cortical capillaries is augmented by Gpp(NH)p. Various cellular types within the cerebral cortex may therefore possess different receptor characteristics with respect to stimulation of adenylate cyclase by neurohormones. 35 references. (Author abstract modified)

001286 Peng, C. H. Lee; Yang, M. M. P.; Kok, S. H.; Woo, Y. K. Dept. of Biochemistry, University of Hong Kong, Hong Kong, China **Endorphin release: a possible mechanism of acupuncture analgesia.** Comparative Medicine East and West. 6(1):57-60, 1978.

The hypothesized action of acupuncture analgesia in stimulating release of endorphins was investigated. The brain and serum extracts of acupunctured rabbits injected into rabbits produced a marked analgesic effect on the recipient, as shown by a great increase of their pain threshold. This effect was counteracted by a specific opiate antagonist, naloxone. The data suggest that the release of the endogenous substance with morphine like biological properties, endorphins, is increased by acupuncture stimulation, thus inhibiting pain perception. 13 references. (Author abstract modified)

001287 Perkins, Nancy A.; Westfall, Thomas C.; Paul, Carol V.; MacLeod, Robert; Rogol, Alan D. Department of Pharmacology, School of Medicine, University of Virginia, Charlottesville, VA 22901 **Effect of prolactin on dopamine synthesis in medial basal hypothalamus: evidence for a short loop feedback.** Brain Research (Amsterdam). 160(3):431-444, 1979.

The effects of prolactin on dopamine synthesis in the medial basal hypothalamus were studied in male Sprague-Dawley rats. Trifluoperazine (5mg/kg, ip) elevated serum prolactin and produced a significant increase in the conversion of tritiated tyrosine to dopamine in slices of medial basal hypothalamus and striatum. Hypophysectomy abolished this effect of trifluoperazine in the medial basal hypothalamus but not in the striatum. Dopamine synthesis was significantly enhanced in slices of medial basal hypothalamus obtained from rats bearing primary tumor implants that secreted microgram quantities of prolactin, but dopamine synthesis in the striatum of these rats was increased by the secretory products of one tumor line but not of another. It is suggested that the ability of prolactin to accelerate synthesis of dopamine in the medial basal hypothalamus may constitute a short loop feedback system that finely regulates prolactin secretion. 26 references. (Author abstract modified)

001288 Perlow, M. J.; Enna, S. J.; O'Brien, P. J.; Hoffman, H. J.; Wyatt, R. J. Laboratory of Clinical Psychopharmacology, Saint Elizabeth's Hospital, Washington, DC 20032 **Cerebrospinal fluid gamma-aminobutyric acid: daily pattern and response to haloperidol.** Journal of Neurochemistry (Oxford). 32(1):265-268, 1979.

In order to determine whether a circadian variation can be observed for gamma-aminobutyric acid (GABA), GABA was measured in the cerebrospinal fluid (CSF) of rhesus monkeys over a 24 hour day and following acute treatment with haloperidol. The results indicate that in the CSF spaces GABA concentration fluctuated widely. The highest concentration occurred during the daytime and the lowest concentration at night. No circadian or other rhythmic trend was noted. Despite a marked sedation following haloperidol administration, there was no change in the GABA concentration in cisternal CSF over the 24 hour period. The relationship between GABA concentration and dopamine metabolism is discussed. 50 references.

001289 Pettibone, D. J.; Wurtman, R. J.; Leeman, S. E. Laboratory of Neuroendocrine Regulation, Dept. of Nutrition and Food Science, MIT, Cambridge, MA 02139 **D-amphetamine administration reduces substance P concentrations in the rat striatum.** Psychopharmacology Bulletin. 14(4):24-26, 1978.

In a paper presented at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the effects of d-amphetamine in reducing substance P (SP) concentration in the rat striatum are described. Two hours after d-amphetamine administration, the concentration of SP in the striatum was reduced by 20% to 35%; this effect was blocked by prior administration of haloperidol. That diminished SP synthesis is involved in d-amphetamine's effect on striatal SP levels is suggested by the locus of the reduction, i.e.,initially within cell bodies but not nerve terminals, and the similarity of its time course to that of d-amphetamine induced polysome disaggregation. 21 references.

001290 Pettibone, Douglas J.; Wurtman, Richard J.; Leeman, Susan E. Department of Nutrition and Food Science, Massachusetts Institute of Technology, Cambridge, MA 02139 **D-amphetamine administration reduces substance P concentration in the rat striatum.** Biochemical Pharmacology (Oxford). 27(5):839-842, 1978.

The effect of intraperitoneal administration of 10mg/kg d-amphetamine on the concentration of immunoreactive substance P in the striatum was examined in male Sprague-Dawley rats. Two hours after amphetamine administration, the concentration of substance P in the striatum was reduced by 20-35%. This effect was blocked by prior administration of the dopamine receptor antagonist haloperidol. The decline in striatal substance P levels first became evident 1 hour after injection and persisted through 4 hours. In the substantia nigra, substance P levels were slightly reduced 2-8 hours after d-amphetamine, but the reduction was not significant. It is suggested that d-amphetamine affects the synthesis of substance P or a precursor compound via a presynaptic action (increasing dopamine release) or by directly affecting the protein synthetic apparatus. 21 references.

001291 Pezalla, Paul D.; Seidah, Nabil G.; Benjannet, Suzanne; Crine, Philippe; Lis, Martin; Chretien, Michel. Department of Biological Sciences, University of Illinois at Chicago Circle, Chicago, IL 60680 **Biosynthesis of beta-endorphin, beta-lipotropin, and the putative ACTH-LPH precursor in the frog pars intermedia.** Life Sciences (Oxford). 23(22):2281-2291, 1978.

The biosynthesis of adrenocorticotrophic hormone (ACTH) and lipotropin (LPH) related peptides was investigated in the pars intermedia of the leopard frog (Rana pipiens). When the frog pars intermedia were incubated for 3 hours with radioactive methionine, the predominant labeled peptide was one with an apparent molecular weight of 33,100. This peptide could be immunoprecipitated with antisera against beta-melantropin, ACTH, and beta-endorphin; the peptide is believed to be the common precursor of ACTH and beta-LPH. Immunoprecipitation experiments also demonstrated the presence of labeled beta-LPH and beta-endorphin. The labeled beta-endorphin behaved identically to sheep beta-endorphin on carboxymethyl cellulose chromatography and on polyacrylamide gel electrophoresis. Frog beta-endorphin has methionine as the fifth residue, as do all other beta-endorphins that have been sequenced. 25 references. (Author abstract modified)

001292 Pickel, Virginia M.; Joh, Tong H.; Reis, Donald J.; Leeman, Susan E.; Miller, Richard J. Laboratory of Neurobiology, Department of Neurology, Cornell University Medical College, New York, NY 10021 **Electron microscopic localization of substance P and enkephalin in axon terminals related to den-**

drites of catecholaminergic neurons. Brain Research (Amsterdam). 160(3):387-400, 1979.

Electron microscopic immunocytochemistry was used to determine if a positive reaction to substance P and met5-enkephalin could be localized to axon terminals forming synapses with catecholaminergic neurons in the locus coeruleus and A2 region of the medulla in male Sprague-Dawley rat brain. In both regions, the catecholaminergic neuronal marker tyrosine hydroxylase was localized primarily to perikarya and dendrites of intrinsic neurons, whereas substance P and enkephalin-like immunoreactivity was localized to axons and axon terminals. The axon terminals showing positive reactions for substance P and met5-enkephalin were morphologically similar to each other and to one type of axon terminal that formed synapses with dendrites labeled for tyrosine hydroxylase; this type of axon always formed asymmetric synaptic junctions and contained three or four large (75-100nm) dense vesicles (LDVs) and many small (40-60nm) clear vesicles (SCVs). The reaction product for substance P and met5-enkephalin was distributed throughout the lumen of the LDVs and formed a rim of labeling around the outer boundaries of the SCVs. These findings indicate that substance P and met5-enkephalin positive reactions are selectively localized to subcellular organelles in axon terminals in the locus coeruleus and A2 region of rat brain and suggest that the labeled axon terminals form synapses with dendrites of catecholaminergic neurons. 36 references.

001293 Pieri, L.; Keller, H. H.; Burkard, W.; Da Prada, M. Pharmaceutical Research Department, F. Hoffmann-La Roche & Co. Ltd., CH-4002 Basel, Switzerland **Effects of lisuride and LSD on cerebral monoamine systems and hallucinosis.** Nature (London). 272(5650):278-280, 1978.

The effects of lysergic acid diethylamide (LSD) and lisuride on biochemistry of brain amines in the rat were compared. Lisuride is an ergot derivative recently introduced for the treatment of migraine, and in oral doses of up to 600mg, lisuride is without hallucinogenic properties in man. Experiments were carried out in male albino rats; brain amines were determined spectrofluorimetrically; adenylate cyclase activity was measured in striatal homogenates and cyclic AMP formation was measured in limbic forebrain slices. Lisuride was found to produce biochemical changes which were similar to, but much more marked than, those produced by LSD. These findings challenge the generally accepted assumption that the psychotomimetic actions of LSD correlate with a decrease of 5-hydroxytryptamine turnover. The lisuride induced decrease of 5-hydroxytryptamine turnover is not at all associated with hallucinogenic effects. The differences between the effects of lisuride and LSD on the rat monoaminergic system are of a quantitative rather than a qualitative nature. It cannot be excluded that LSD, as well as tryptamine derivatives, which are compounds of the mixed agonist antagonist type at dopamine receptor sites, could induce hallicinosis by reciprocally interacting with the dopamine receptor, both in its agonistic as well as antagonistic state. 31 references. (Author abstract modified)

001294 Plomp, Gerda J. J.; Van Ree, Jan M. Centre for Human Toxicology, University of Utrecht, Vondellaan 14, Utrecht, The Netherlands **Adrenocorticotrophic hormone fragments mimic the effect of morphine in vitro.** British Journal of Pharmacology (London). 64(2):223-227, 1978.

Fragments of the N-terminal part of adrenocorticotrophic hormone (ACTH) inhibited the electrically evoked contractions of the male Swiss mouse vas deferens. This inhibition was antagonized by naloxone. The same fragments displaced radiolabeled morphine from morphine antiserum. Structure/activity relationship studies showed that in both assay systems, the active core is located within the sequence ACTH 7-10. It is postulated that the Trp9 residue and the peptide bond between Trp9 and Gly10 are particularly important for the interaction of ACTH fragments with morphine receptors. 20 references. (Author abstract)

001295 Pomeranz, B.; Cheng, R. Department of Zoology, University of Toronto, Toronto M5S 1A1, Canada **Suppression of noxious responses in single neurons of cat spinal cord by electroacupuncture and its reversal by the opiate antagonist naloxone.** Experimental Neurology. 64(2):327-341, 1979.

Electroacupuncture (EA) reduced the electrophysiologic noxious responses of single cells in lamina V of cat spinal cord, but had no effect on nonnoxious responses. The suppression of nociception induced by EA reached a peak at 20 minutes. Intravenous injection of naloxone blocked the EA effect. Taken together with previous findings, these results suggest that EA activates sensory afferent fibers that send messages to the brainstem or pituitary, causing a descending inhibition mediated by enkephalins or beta-endorphin. 32 references. (Author abstract modified)

001296 Poole, S.; Stephenson, J. D. Department of Pharmacology, Institute of Psychiatry, De Crespigny Park, London SE5 8AF, England **Effects of noradrenaline and carbachol on temperature regulation of rats.** British Journal of Pharmacology (London). 65(1):43-51, 1979.

Noradrenaline (0.2-20mcg) and carbachol (0.101mcg) injected into the preoptic/anterior hypothalamic area of male Wistar rats evoked dose dependent falls in core temperature, followed by delayed increases that were not dose related. Muscarine (0.1-10mcg) produced effects similar to those evoked by carbachol. The decreases in core temperature were associated with increases in tail temperature, locomotor activity, and carbon dioxide elimination. The temperature responses to noradrenaline (10mcg) and to carbachol (1mcg) were antagonized by intrahypothalamic injections of phentolamine (10mcg) and atropine (1mcg), respectively. The carbachol-induced hypothermia appeared to be mediated by cholinoceptors in the anterior hypothalamus, whereas the hypothermia after noradrenaline was mediated by adrenoceptors throughout the preoptic/anterior hypothalamic area. 25 references. (Author abstract modified)

001297 Potashner, S. J. Department of Anatomy, University of Connecticut Health Center, Farmington, CT 06032 **Baclofen: effects on amino acid release and metabolism in slices of guinea pig cerebral cortex.** Journal of Neurochemistry (Oxford). 32(1):103-109, 1979.

Slices of guinea pig cerebral cortex were used to investigate the effects of the antispastic drug beta-(rho-chlorophenyl)-gamma-aminobutyrate (Baclofen, Lioresal) on the release and metabolism of several amino acids. Electrical stimulation of slices evoked a relatively large release of 14C-labeled tissue alanine and threonine-serine-glutamine and of exogenous radiolabeled glutamate aspartate, GABA, and alpha-aminoisobutyrate that had been taken up in the medium. Baclofen preferentially inhibited the release of 14C-labelled tissue glutamate and aspartate and had no effect on the concentrations and specific radioactivities of most of the labelled tissue amino acids in the slices. It is concluded that Baclofen affects transmission not by modulating the release of the inhibitory amino acid GABA, but by selectively suppressing the release of the excitatory amino acids glutamate and aspartate from nerve terminals. The Baclofen-induced increase in glycine turnover suggests an additional effect on inhibitory glycinergic interneurons in the spinal cord. 59 references. (Author abstract modified)

001298 Prange, Arthur J., Jr.; Nemeroff, Charles B; Loosen, Peter T.; Wilson, Ian C. Dept. of Psychiatry, University of

North Carolina at Chapel Hill, School of Medicine, Chapel Hill, NC **Pharmaco-behavioral effects of oligopeptides endogenous to brain.** Psychopharmacology Bulletin. 14(4):20-23, 1978.

In a paper presented at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the pharmacobehavioral effects of oligopeptides endogenous to brain are described. Certain problems of interpretation which continue to attend investigations of behavioral effects of peptides are described. These include an interpretation of the magnitude of adminstered doses. It is difficult to know whether a dose, especially a peripherally administered dose, is large or small since destruction of peptide by enzymes is rapid, penetration of the blood brain barrier uncertain, and the identity of active sites is often unknown. Specificity of action is another problem that presently can only be characterized but not resolved. 23 references.

001299 Proudfit, Herbert K. Dept. of Pharmacology, University of Illinois College of Medicine, Chicago, IL **Brain lesions and narcotic drugs.** Psychopharmacology Bulletin. 14(4):32-35, 1978.

In a paper presented at the session on neurological pharmacology at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the use of brain lesion techniques in the investigation of the mechanisms of action of narcotic drugs is reviewed. Studies of the influence of various brain lesions on analgesic drug actions have implicated a number of brain sites in the mediation of pain perception and opiate induced antinociception. Conflicting results of these studies are discussed in relation to development of more selective lesioning techniques and standardization of analgesiometric testing procedures. 30 references.

001300 Quattrone, Aldo; Di Renzo, Gianfranco; Schettini, Gennaro; Tedeschi, Gioacchino; Scopacasa, Franco. Department of Neurology, I Faculty of Medicine, Piazza Miraglia 2, Naples, Italy **Increased plasma prolactin levels induced in rats by d-fenfluramine: relation to central serotonergic stimulation.** European Journal of Pharmacology (Amsterdam). 49(2):163-167, 1978.

The 5-hydroxytryptamine (5-HT) agonist quipazine (10 and 20mg/kg) and the 5-HT releaser d-fenfluramine (7.5and 10mg/kg) increased plasma prolactin levels in male Wistar rats. Oral pretreatment with metergoline (3mg/kg) or p-chlorophenylalanine (100mg/kg) markedly blocked the prolactin releasing effect of both quipazine and d-fenfluramine. Results suggest that the effect of these drugs on prolactin secretion may be mediated by 5-HT; brain 5-HT may thus exert a stimulatory role on prolactin secretion in rats. 30 references. (Author abstract)

001301 Racagni, G.; Groppetti, A.; Parenti, M.; Bugatti, A.; Bruno, F.; Maggi, A.; Cattabeni, F. Department of Pharmacology, School of Pharmacy, University of Milan, Via Andrea Del Sarto 21, Milan, Italy **Evidences for a direct action in striatum of dopaminergic receptor antagonists mediating DOPAC formation.** Life Sciences (Oxford). 23(17/18):1757-1761, 1978.

At the symposium, ""Receptors of Dopamine Antagonists: New Biochemical Approaches," held in Beerse, Belgium, July 1978, a paper was presented with evidence for a direct action in striatum of dopaminergic receptor antagonists mediating 3, 4-dihydroxyphenylacetic acid (DOPAC) formation. DOPAC changes elicited by dopaminergic receptor antagonists were investigated in male Sprague-Dawley rats subjected to local application of trifluoperazine in striatum or substantia nigra. Results suggest that the mechanisms responsible for DOPAC formation are localized outside the substantia nigra and possibly within the striatum. It is suggested that cholinergic neurons partially regulate the haloperidol induced increase of striatal DOPAC. Cortical ablation studies indicate that this effect is not mediated by the interaction of dopaminergic antagonists with the population of receptors located on corticostriatal pathways. 22 references. (Author abstract modified)

001302 Racine, Ronald; Coscina, Donald V. Department of Psychology, McMaster University, 1280 Main Street West, Hamilton, Ontario, Canada L8S 4K1 **Effects of midbrain raphe lesions or systemic p-chlorophenylalanine on the development of kindled seizures in rats.** Brain Research Bulletin. 4(1):1-7, 1979.

The incidence and magnitude of seizures kindled from the amygdala or neocortex were determined in male hooded rats following depletion of brain 5-hydroxytryptamine (5-HT) by radiofrequency lesions of the midbrain dorsal and median raphe nuclei or by systemic injection of the 5-HT synthesis inhibitor, p-chlorophenylalanine (pCPA). Both methods of 5-HT depletion reliably enhanced the strength of motor convulsions kindled from the cortex. Systemic pCPA also reduced the duration of after discharges (ADs) in cortically stimulated rats. However, pCPA reduced rather enhanced convulsions kindled from the amygdala. In contrast, raphe lesions sensitized rats to the effects of amygdaloid kindling; the lesions lowered AD thresholds, AD durations, and number of ADs to elicit motor convulsions. Results suggest that 5-HT neurons can serve to inhibit seizures, but that kindled seizures affect other neuronal populations in addition to those under serotonergic influence. 42 references. (Author abstract modified)

001303 Radouco-Thomas, Simone. no address **Symposium 9: role of cations in synaptic function and in the mechanism of action of neuro-psychotropic drugs.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 353-434).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, symposium 9 was concerned with the role of cations in synaptic function and in the mechanism of action of neuropsychotropic drugs. The role of calcium in neurosecretion, the activation of brain adenylate cyclase by calcium ion receptors, and the role of cations in the transport of neurotransmitters and their amino acid precursors are discussed. The relationships between cyclic nucleotides and divalent cations in neuroblastoma cells and modifications of these relationships by neurotransmitters and psychotropic drugs are described. Other topics include: interactions between cations and psychotropic drugs; the influence of hypothalamic ions on limbic function; the action of sodium, magnesium, and lithium in patients with affective disorders; and the action of lithium on phosphate, calcium, and magnesium.

001304 Reader, Tomas A.; Ferron, Andre; Descarries, Laurent; Jasper, Herbert H. Centre de Recherche en Sciences Neurologiques, Universite de Montreal, Montreal, Quebec H3C 3T8, Canada **Modulatory role for biogenic amines in the cerebral cortex. Microiontophoretic studies.** Brain Research (Amsterdam). 160(2):217-229, 1979.

The unitary activity of spontaneously firing neurons in rat cerebral cortex and their excitatory response to acetylcholine (ACh) were examined following microiontophoretic administration of dopamine (DA), noradrenaline (NA), and serotonin (5-hydroxytryptamine, 5-HT). The predominant effect of these biogenic amines on spontaneous activity was a profound and prolonged inhibition of firing (2-4 minutes), which attained its maximum within 15-120 seconds. This response was generally more abrupt in onset and of greater magnitude with NA and 5-HT than with DA. Most units inhibited by DA, NA, and 5-HT also showed marked depression of their excitatory response to ACh when pretreated with these biogenic amines. With repetitive ad-

ministration of ACh, the total duration of inhibition of ACh responses by DA and NA was not as prolonged as the inhibition of spontaneous firing of the same cells. With 5-HT, the initial ACh responses of many neurons could be completely blocked, and this inhibitory effect lasted as long as the inhibition of spontaneous firing. Results are discussed in relation to the effects of DA, NA, 5-HT, and ACh on intracellular pools of cyclic adenosine monophosphate and cyclic guanosine monophosphate. 63 references. (Author abstract modified)

001305 Rehavi, Moshe; Yaavetx, Bella; Kloog, Yoel; Maayani, Saul, Sokolovsky, Mordechai. Department of Biochemistry, George S. Wise Center for Life Sciences, Tel Aviv University, Tel Aviv, Israel **In vivo and in vitro studies on the antimuscarinic activity of some amino esters of benzilic acid.** Biochemical Pharmacology (Oxford). 27(8):1117-1124, 1978.

The cholinergic antimuscarinic properties of some aliphatic and heterocyclic aminoesters of benzilic acid were evaluated in the CNS and in peripheral organs. Antagonism to hypothermia and to forced motor activity disturbances, both centrally mediated and induced in adult male ICR mice by oxotremorine, was kinetically determined in vivo. The anticholinergic activity of these compounds on the isolated guinea-pig ileum and their affinity for muscarinic high affinity binding sites in mouse brain homogenate were determined and correlated in vitro. 3-Quinuclidinyl benzilate was found to be the most potent drug in vivo and in vitro, while dimethylaminoethyl benzilate was the least active. Atropine was as potent as scopolamine in the competition experiments in vitro but 10 times less active in the two in vivo tests. The relationship between the molecular structure and the properties of compounds is discussed in terms of factors contributing to observed rate constants of antimuscarinic activity. 27 references. (Author abstract modified)

001306 Reingold, Diane F.; Orlowski, Marian. Department of Pharmacology, Mount Sinai School of Medicine, City University of New York, New York, NY 10029 **Inhibition of brain glutamate decarboxylase by 2-keto-4-pentenoic acid, a metabolite of allylglycine.** Journal of Neurochemistry (Oxford). 32(3):907-913, 1979.

The mechanism of inhibition of brain L-glutamate decarboxylase (GAD) by 2-keto-4-pentenoic acid was investigated in vivo and in vitro in male Sprague-Dawley rats and Swiss mice. The keto acid was prepared by oxidative deamination of L-allylglycine with snake venom L-amino acid oxidase. In the presence of glutamate, 2-keto-4-pentenoic acid was a competitive GAD inhibitor. After preincubation of brain GAD with the keto acid in the absence of glutamate, a slow and incomplete reactivation was obtained by prolonged dialysis, Sephadex gel filtration, and dilution, suggesting the formation of a slowly dissociating enzyme/inhibitor complex and partial inactivation of the enzyme. In vivo, the inhibition of brain GAD was maximal 2 to 8 hours after administration of allylglycine, with activity returning to normal after 16 hours; the GAD inhibition after D-allylglycine was greatest in the cerebellum and medulla pons areas, the sites of greatest D-amino acid oxidase activity. Results strongly support the suggestion that the allylglycine-induced inhibition of brain GAD is due to the in vivo formation of 2-keto-4-pentenoic acid. 24 references. (Author abstract modified)

001307 Renis, M.; Giovine, A.; Bertolino, A. Laboratory of Biochemistry and Neuropathology, Mental Hospital 'Case Divina Provvidenza,' I-70052 Bisceglie, Italy **MAO activity in rat brain stem and cerebral cortex: effect of acute and chronic treatment with ethanol and tetrahydropapaveroline.** Pharmacology (Basel). 17(1):1-7, 1978.

The effects of ethanol and tetrahydropapaveroline (THP) on monoamine oxidase (MAO) activity in the brainstem and cerebral cortex of male Wistar rats were investigated, using dopamine, serotonin, noradrenaline, and tryptamine as substrates. Results indicate that acute treatment with ethanol or THP stimulates MAO activity. However, chronic treatment with ethanol stimulates MAO activity, whereas chronic treatment with THP inhibits the enzyme. The different action of the two drugs after chronic administration indicates that the effect of ethanol on MAO activity can only be minimally attributed to the formation of tetrahydroisoquinoline compounds. 33 references. (Author abstract modified)

001308 Richter, Judith A.; Werling, Linda L. Institute of Psychiatric Research, Indiana University School of Medicine, Indianapolis, IN 46202 **K-stimulated acetylcholine release: inhibition by several barbiturates and chloral hydrate but not by ethanol, chlordiazepoxide or 11-OH-delta9-tetrahydrocannabinol.** Journal of Neurochemistry (Oxford). 32(3):935-941, 1979.

Thiamylal, methohexital, secobarbital, amobarbital, pentobarbital, phenobarbital, barbital, and chloral hydrate inhibited the potassium stimulated release of acetylcholine (ACh) from male Wistar rat midbrain slices in a dose related manner. The concentrations required for 50% inhibition were related to the lipid partition coefficient. None of the barbiturates nor chloral hydrate inhibited unstimulated ACh release. Ethanol, chlordiazepoxide, and 11-hydroxy-delta9-tetrahydrocannabinol were without effect on stimulated and spontaneous ACh release. Results are discussed in terms of other effects of these drugs on the cholinergic system. 42 references. (Author abstract)

001309 Roberts, Eugene; Wong, Esther; Svenneby, Gerd; Degener, Phyllis. Division of Neuroscience, City of Hope National Medical Center, 1500 East Duarte Road, Duarte, CA 91010 **Sodium-dependent binding of GABA to mouse brqyn particles.** Brain Research (Amsterdam). 152(3):614-619, 1978.

The development of a simplified, thoroughly washed, membrane preparation which shows the typical binding characteristics of gamma-aminobutyric acid (GABA) transport system is described in terms of the procedures and some of the results obtained with mouse brain particles. The most potent inhibitory substances for GABA binding found were nipecotic acid, harmaline, and ketamine. Results indicate that the membrane preparation required sodium for its activity, had no energy requirement, and took place rapidly at 0 to 4 Celsius. 33 references.

001310 Roberts, P. J.; Gupta, H. K.; Shargill, N. S. School of Biochemical and Physiological Sciences, University of Southampton, Southampton S09 3TU, England **The interaction of baclofen (beta-(4-chlorophenyl)GABA) with GABA systems in rat brain: evidence for a releasing action.** Brain Research (Amsterdam). 155(1):209-212, 1978.

The effects of baclofen on gamma-aminobutyric acid (GABA) receptor binding, high affinity GABA uptake, and GABA release in rat brain were investigated. The marked inability of GABA receptor blockers to influence the inhibitory action of iontophoretically applied baclofen had been noted. It is demonstrated that while baclofen does not interact directly with GABA receptors, as is ascertained by an in vitro receptor binding assay, it is capable at low concentrations of evoking a release of exogenously accumulated (3H) GABA. It is postulated that it would similarly be able to effect a release of endogenous GABA. Baclofen, even at high concentrations, was essentially devoid of any inhibitory activity on the uptake of (3H) GABA. Therefore, an analogous mechanism to that exerted by GABA and other substrates for the high affinity uptake system is ruled

out, and a possible action on presynaptic receptors is suggested. 20 references.

001311 Rodriguez de Lores Arnaiz, Georgina; Mistrorigo de Pacheco, Marta. Instituto de Biologia Celular, Facultad de Medicina, Universidad de Buenos Aires, Paraguay 2155, 1121 Buenos Aires, Argentina **Regulation of (Na, K) adenosinetriphosphatase of nerve ending membranes: action of norepinephrine and a soluble factor.** Neurochemical Research. 3(6):733-744, 1978.

Norepinephrine added in vitro to nerve ending membranes from Wistar rat cerebral cortex stimulated the activity of sodium/potassium (Na, K) activated adenosine triphosphatase only in the presence of the soluble brain fraction. In its absence, norepinephrine inhibited the enzyme. Magnesium activated ATPase also showed stimulation by norepinephrine in the presence of the soluble fraction, but of a lesser magnitude. The activation of (Na, K) ATPase by norepinephrine was not reproduced by cyclic adenosine monophosphate (AMP) and was not antagonized by alpha-adrenergic or beta-adrenergic blocking agents. Results suggest that the stimulation caused by norepinephrine is a direct effect on the enzyme and is not mediated by cyclic AMP or adrenergic receptors. 21 references. (Author abstract)

001312 Roffman, Mark; Cassens, Geraldine; Schildkraut, Joseph J. Department of Pharmacology, CIBA-Geigy Corp., Summit, NJ 07901 **Effects of the d- and l-isomers of amphetamine on the levels of 3-methoxy-4-hydroxyphenylglycol sulfate in whole rat brain and rat brain regions.** Biochemical Pharmacology. 27(13):1774-1777, 1978.

The effects of d-amphetamine and l-amphetamine on the turnover of norepinephrine (NE) in the Sprague-Dawley rat brain were determined by measuring the endogenous leveles of the sulfate conjugate of 3-methoxy-4- hydroxyphenylglycol (MHPG-S04), a major NE metabolite. Acute administration of d-amphetamine resulted in a dose related increase in the levels of MHPG-S04 in whole rat brain (up to a dose of 5mg/kg), whereas the l-isomer was considerably less potent. The highest dose of each isomer (10mg/kg d-amphetamine, 20mg/kg l-amphetamine) attenuated the increases in MHPG-S04 levels observed at lower doses. D-amphetamine (2.5or 5.0mg/kg) significantly increased the levels of MHPG-S04 in the hypothalamus but not in the cerebellum or brainstem; in the cortex, an increase in MHPG-S04 was observed only after administration of 5mg/kg d-amphetamine. L-amphetamine (10mg/kg) significantly increased NE turnover in the hypothalamus but not in the cerebellum or brainstem; in the cortex, this dose of l-amphetamine produced a small, nonsignificant increase in MHPG-S04 levels. 34 references.

001313 Rosenblatt, Jack E.; Pert, Candace B.; Tallman, John F.; Pert, Agu; Bunney, William E. Jr. Laboratory of Clinical Psychopharmacology, NIMH, St. Elizabeths Hospital, Washington, DC 20032 **The effect of imipramine and lithium on alpha- and beta-receptor binding in rat brain.** Brain Research (Amsterdam). 160(1):186-191, 1979.

The effects of lithium and imipramine on the development of receptor supersensitivity and subsensitivity in brain were investigated in male Sprague-Dawley rats. Chronic imipramine treatment for 2 weeks did not induce alpha-receptor supersensitivity in brain and did not alter (3H)spiroperidol binding to dopamine receptors in striatum. A decrease in (3H)dihydroalprenolol binding to beta-adrenergic receptors in membranes derived from whole brain was observed after chronic imipramine, however. Chronic treatment with lithium for 3 weeks increased alpha-receptor binding by 17 to 27% and decreased beta-receptor binding by 10 to 13%. Lithium had no significant effect on dopamine receptor binding and did not significantly alter the beta-receptor subsensitivity induced by chronic imipramine treatment. Chronic lithium treatment appeared to increase the number of (3H)WB-4101 binding sites without significantly altering receptor affinity; the decrease in beta-receptor binding induced by lithium seemed to be attributable to a decreased number of specific binding sites. 13 references.

001314 Roskoski, Robert, Jr. Department of Biochemistry, University of Iowa, Iowa City, IA 52242 **Net uptake of aspartate by a high-affinity rat cortical synaptosomal transport system.** Brain Research (Amsterdam). 160(1):85-93, 1979.

Net (chemical) and apparent (radioactive) uptake into synaptosomal fractions were equivalent in rat cortical synaptosomes incubated with 10mcM (14C)L-aspartate. Although there was net aspartate uptake into the synaptosomal fraction, aspartate exchange could be demonstrated in a variety of conditions. Net uptake showed characteristics of high affinity transport systems, including sodium and temperature dependence. Furthermore, potassium chloride or rubidium chloride (1mM) were required for net uptake but not for apparent uptake. Lithium chloride, ammonium chloride, cesium chloride, and choline chloride failed to support net uptake. Ouabain (0.1mM) inhibited net uptake to a greater extent than apparent uptake. Although glutamate inhibited aspartate uptake and vice versa, the net uptake of the combination was greater than that of each alone. The demonstration of net uptake of aspartate by a high affinity system is consonant with the idea that this system may play a role in the inactivation of aspartate in the synaptic region. 29 references. (Author abstract modified)

001315 Rubin, Eugene Harold. Washington University **Distribution and regulation of cyclic nucleotides in the cerebellum. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7730169, HC$15. MF$7.50. 140 p. 1978.

To define the possible roles of cyclic guanosine monophosphate (GMP) and cyclic adenosine monophosphate (AMP) in central nervous system (CNS) functioning, the distribution of cyclic nucleotides within mouse cerebellum and the effect of various pharmacological and physical treatments on cerebellar levels of the nucleotides were determined. Regions of the CNS other than the cerebellum were shown to have cyclic GMP levels which were lower than those of the cerebellum but which could be altered by many of the manipulations which affect cerebellar levels. One could not predict from the direction of changes of cerebellar cyclic GMP whether this cyclic nucleotide would be increased, unchanged, or decreased in other regions. Many agents which alter in vivo levels of cyclic GMP were tested in incubated slices of cerebellum and none caused similar changes in vitro. Cyclic GMP and cyclic AMP appear to have separate roles in the CNS. It is suggested that cyclic GMP levels are regulated by depolarization induced changes in Ca2 influx, and that alterations in the levels of cyclic GMP reflect changes in neuronal activity. (Journal abstract modified)

001316 Sahar, Abraham; Tsipstein, Edith. Department of Neurosurgery, Hadassah-Hebrew University Hospital, Ein Kerem, Jerusalem, Israel **Effects of mannitol and furosemide on the rate of formation of cerebrospinal fluid.** Experimental Neurology. 60(3):584-591, 1978.

The inhibitory effects of mannitol and furosemide on the rate of production of cerebrospinal fluid (CSF) were examined in cats by ventriculocisternal perfusion. In 26 cats, mannitol caused as much as an 89% decrease in CSF formation as the serum osmolality was raised from 311 to 336 mosmol/liter by intrave-

nous mannitol infused at rates from 2 to 10mg/kg/min. The degree of decrease was a linear function of the rise in serum osmolality. Furosemide reduced CSF production by as much as 94% when intravenous doses of 0.87 to 20.3mg/kg were used in 25 animals; the decrease was dependent on the natural logarithm of the dose. Intraventricular furosemide at concentrations of 0.06 to 0.24mg/ml was very effective in 10 cats, without causing saluresis or diuresis. This effect was also linearly related to the natural logarithm of the concentration. 21 references. (Author abstract modified)

001317 Salomon, Raphael. Department of Neurobiology, Weizmann Institute of Science, Rehovot, Israel **The effect of amphetamines on culture myotubes: selective inhibition of protein synthesis.** Life Sciences. 23(19):1941-1949, 1978.

The effect of amphetamines on protein synthesis in cultured chick myotubes was studied with d-amphetamine sulfate, p-chloramphetamine, and fenfluramine (10microuM-100microuM concentrations). The most strongly inhibited cellular protein was a 34000 dalton polypeptide; myosin was affected to a smaller extent, while actin and tubulin were the least affected. Concentrations of 25microuM or more of the drugs inhibited the incorporation of amino acid into proteins by 50%, while not reducing the acetylcholinesterase activity. The selective inhibition of protein synthesis may be one possible mechanism of the long-lasting effects of these drugs. 19 references. (Author abstract modified)

001318 Sangdee, Chaichan; Franz, Donald N. Department of Pharmacology, University of Utah College of Medicine, Salt Lake City, UT 84132 **Lithium-induced enhancement of 5-HT transmission at a central synapse.** Communications in Psychopharmacology. 2(3):191-198, 1978.

The ability of 5-hydroxytryptamine (5-HT) precursors to depress the excitability of sympathetic preganglionic neurons in spinal cats was markedly enhanced by a 3 day pretreatment regimen with lithium chloride that provides plasma lithium levels of about 1.5mEq/L. Since this depression by 5-HT precursors is apparently mediated by snythesis and spontaneous release of 5-HT from the terminals of inhibitory bulbospinal 5-HT neurons, its enhancement by lithium indicates increases in 5-HT synthesis and subsequent release. Results are compatible with evidence that lithium increases the uptake of L-tryptophan by the brain and by central 5-HT terminals, thereby enhancing synthesis of 5-HT. Results tend to support the permissive amine hypothesis of affective disorders and suggest a possible improvement in lithium therapy. 10 references. (Author abstract)

001319 Sarai, Keisuke; Frazer, Alan; Brunswick, David; Mendels, Joe. Department of Neurology and Psychiatry, Hiroshima University School of Medicine, Hiroshima City, 734 Japan **Desmethylimipramine-induced decrease in beta-adrenergic receptor binding in rat cerebral cortex.** Biochemical Pharmacology (Oxford). 27(17):2179-2181, 1978.

Repeated administration of desmethylimipramine (DMI) to male Sprague- Dawley rats resulted in reduced binding of the beta-adrenergic receptor antagonist (-)(3H)dihydroalprenolol in homogenates of cerebral cortex. The reduction in (-)(3H)dihydroalprenolol binding appeared to be due to a decreased number of beta-adrenergic receptors in this area rather than to a change in binding affinity. Results are discussed in relation to the biogenic amine hypotheses of affective disorders. 27 references.

001320 Saratikov, A. S.; Alekseyeva, L. P.; Agarkova, V. P.; Naydenova, M. I. Kafedra farmakologii, Tomsk meditsinskiy institut, Tomsk, USSR /**The effect of lithium chloride on the excitability of certain subcortical structures in the rabbit brain.**/ Vliyaniye khlorida litiya na vozbudimost' nekotorykh podkorkovykh struktur mozga krolika. Farmakologiya i Toksikologiya (Moskva). 41(3):261-263, 1978.

The effects of lithium chloride on subcortical formations in the rabbit brain were investigated. A total of 60 rabbits of both sexes, weighing from 3 to 3.2kg, were given injections of lithium chloride while a control group was injected with distilled water. EEG was recorded for 2 hours after injection. The lithium chloride was found to produce a depressive effect on subcortical formations. It decreased the excitability of the hippocampus, the caudate nucleus, the mesencephalic reticular formations, the thalamus and the hypothalamus. Excitability of the amygdalae increased with this type of microinjection, but decreased with intravenous injection. 10 references. (Journal abstract modified)

001321 Sarna, G. S.; Bradbury, M. W. B.; Cremer, Jill E.; Lai, J. C. K.; Teal, Hazel M. Department of Physiology, King's College, London WC2R 2LS, England **Brain metabolism and specific transport at the blood-brain barrier after portocaval anastomosis in the rat.** Brain Research (Amsterdam). 160(1):69-83, 1979.

The rapid metabolism of (1-14C)butyrate and (2-14C)pyruvate in the brain was studied after intracarotid injection in male Wistar rats given an end-to-side portocaval anastomosis (PCA). At 10 or 50 seconds after injection, there was a 40-50% lowering of the total amount of radioactivity in the brain of PCA rats for both compounds. The percentage of distribution of label in various metabolic fractions was unaltered by PCA. Results of the metabolic studies focused on an impaired transport of short chain monocarboxylic acids between blood and brain in PCA rats. Three weeks after PCA, transport of butyrate, pyruvate, and acetate into brain was reduced by 40-50%. The reduction in labeled pyruvate uptake was absent at 1 week, but was consistently present thereafter up to 50 weeks. Eadie-Hofstee analysis of influx at varying substrate concentrations indicated a reduction in maximum velocity values for pyruvate and butyrate uptake, with no changes in Michaelis-Menten constants. The calculated influx rate of glucose in PCA rats was reduced in direct proportion to the lowering of plasma glucose. Results indicate that PCA in the rat induces selective changes in substrates that are transported across the blood/brain barrier via a facilitated transport process. 38 references. (Author abstract modified)

001322 Sauter, J.-F. Department of Anesthesia, Massachusetts General Hospital, Boston, MA 02114 **Electrophysiological activity of a mammalian sympathetic ganglion under hyperbaric nitrous oxide.** Neuropharmacology (Oxford). 18(1):71-75, 1979.

The effect of nitrous oxide on the superior cervical ganglion of the Wistar rat was studied. The electrophysiological activity of both preganglionic and postganglionic nerves, as well as the transsynaptic responses, were recorded extracellularly in an adequate pressure incubation chamber. Postganglionic fibers were more resistant to nitrous ocide narcosis than preganglionic fibers. The synapse narcosis occrred around 10.5atm, after an excitation phase ranging from 0-10 atm on the nitrous oxide pressure scale. 15 references. (Author abstract)

001323 Sauter, J.-F. Department of Anesthesia, Massachusetts General Hospital, Boston, MA 02114 **Electrophysiological activity of a mammalian sympathetic ganglion under hydrostatic and inert gas pressure.** Neuropharmacology (Oxford). 18(1):77-81, 1979.

Rat superior cervical ganglia were exposed to helium, argon, krypton, and nitrogen at 8 atm pressure and to 2, 8, and 14 atm hydrostatic pressure. Under these conditions, nerve action potentials and transsynaptic responses to a 5 Hz stimulation were

recorded extracellularly. All the inert gases had an anesthetic effect on the synapse. Hydrostatic pressure had the reverse effect and facilitated synaptic transmission. The hydrostatic pressure reversal of inert gas narcosis was also demonstrated. 19 references. (Author abstract modified)

001324 Savolainen, H. Department of Industrial Hygiene and Toxicology, Institute of Occupational Health, SF-00290 Helsinki 29, Finland **Labilization of brain lysosomes by trichloroethylene metabolites and peroxide anion in vitro.** Research Communications in Chemical Pathology and Pharmacology. 19(3):533-536, 1978.

The isolation of lysosomes from adult male Wistar rat brain and its incubation in vitro with 10mcM trichloroethylene and microsomes or postmicrosomal supernatant with added NADPH is described. Freezing and incubation with the solvent alone served as controls. The results were compared with the effects of peroxide anion from the xanthine/xanthine oxidase reaction. It is concluded that mere solvent did not cause an appearance of acid proteinase activity in the incubation medium whereas other treatments induced lysosomal labilization. 14 references. (Author abstract)

001325 Schiff, Joel D.; Overweg, Norbert I. A. Department of Physiology and Pharmacology, New York University Dental Center, New York, NY 10010 **Cyclic AMP-independent relaxation of depolarized rat ileal smooth muscle by isoproterenol.** Life Sciences (Oxford). 23(22):2299-2305, 1978.

The processes mediating the cyclic adenosine monophosphate (AMP) independent transient component of beta-adrenergic smooth muscle relaxation was investigated, using segments of distal ileum from female Wistar rats. Isoproterenol effected a rapid transient relaxation of depolarized ileal smooth muscle and a long lasting decline in tension. Dibutyryl cyclic AMP and phosphodiesterase mimicked only the latter effect. Beta-adrenergic blocking agents caused a rapid transient contraction in preparations relaxed by isoproterenol, but not in those relaxed by the other agents; this effect persisted when influx of calcium ions from the extracellular space was prevented. The transient component of the isoproterenol induced relation was attributed to the sequestration of calcium ions at intracellular sites, whereas the contraction following the subsequent addition of beta-blocking agents appeared to be due to the release of calcium ions from these sites. 25 references. (Author abstract modified)

001326 Schiller, Grant D. School of Biological Sciences, Flinders University of South Australia, Bedford Park, 5042, Australia **Reduced binding of (3H)-quinuclidinyl benzilate associated with chronically low acetylcholinesterase activity.** Life Sciences (Oxford). 24(13):1159-1163, 1979.

The maximal binding of tritiated quinuclidinyl benzilate (3H-QNB) in the cortex, striatum, and hippocampus of male hooded Wistar rats repeatedly exposed to the anticholinesterase, diisopropyl fluorophosphate (DFP) was reduced by 25-30%, relative to vehicle treated controls. This reduction in binding was associated with regional acetylcholinesterase (AChE) inhibition of 80-90%. The muscarinic acetylcholine receptor (m-AChR) affinity for 3H-QNB tended to be lower in control preparations than in those from DFP treated rats, but the apparent dissociation constant value was significantly increased only in the striatal control homogenate. Results indicate that chronic low AChE activity is associated with a reduction in the number of m-AChRs and that DFP tolerance and cholinomimetic subsensitivity may involve the m-AChR. 14 references. (Author abstract modified)

001327 Schulz, Rudiger; Blasig, Julia; Laschka, Erika; Herz, Albert. Abteilung fur Neuropharmakologie, Max-Planck-Institut fur Psychiatrie, Kraepelinstrasse 2, D-8000 Munich 40, Germany **Site of naloxone-precipitated opiate withdrawal dissociates from that at which apomorphine reinitiates this phenomenon.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 305(1):1-4, 1978.

In a study of mechanisms underlying the opiate withdrawal syndrome, it was hypothesized that the identity of the site of action of naloxone in inducing jumping in morphine tolerant/dependent rats is dissociated from those structures where apomorphine initiates its action to reinduce jumping in previously withdrawn animals. Findings suggest that dopaminergic pathways do not directly affect the neuronal circuit involved in withdrawal jumping behavior, but instead exert a facilitatory influence on neurons that become supersensitive during the state of withdrawal. Thus, an increased response to apomorphine during naloxone precipitated opiate withdrawal does not necessarily imply a specific supersensitivity of the dopaminergic system. 14 references. (Author abstract modified)

001328 Schwartz, Jean-Charles; Baudry, Michel; Martres, Marie-Pascale; Costentin, Jean; Protais, Philippe. Unite 109 de Neurobiologie, Centre Paul Broca de l'INSERM, 2ter, rue d'Alesia, F-75014 Paris, France **Increased in vivo binding of 3H-pimozide in mouse striatum following repeated adminstration of haloperidol.** Life Sciences (Oxford). 23(17/18):1785-1789, 1978.

In a paper presented at the symposium, ""Receptors of Dopamine Antagonists: New Biochemical Approaches," held in Beerse, Belgium, July 1978, increased in vivo binding of 3H-pimozide in mouse striatum following repeated administration of haloperidol is reported. Increasing doses of 3H-pimozide revealed a saturable binding of the neuroleptic obtained by subtracting the radioactivity in the cerebellum (nonspecific binding) from that recovered in the striatum. The maximal capacity of binding sites was about 40pmol.gtissue. With increased duration of haloperidol treatment, the binding of 3H-pimozide in the striatum progressively increased, along with the behavioral responsiveness to apomorphine. It is suggested that the changes in 3H-pimozide binding are due to an increased maximal capacity of the binding sites for the neuroleptic (by about 40%), with no significant changes in the apparent affinity. The rapid appearance of behavioral hypersensitivity prior to significant changes in 3H-pimozide binding is also discussed. 11 references. (Author abstract modified)

001329 Schweitzer, J. W.; Schwartz, R.; Friedhoff, A. J. Dept. of Psychiatry, New York University School of Medicine, 550 First Avenue, New York, NY 10016 **In vivo formation of dopamine from 3,4-methylenedioxyphenethylamine in the rat.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 231(1):21-29, 1978.

Administered 1-C14-3,4-methylenedioxyphenethylamine led to the excretion of about 2% of the urinary C14 as conjugated dopamine and 3-methoxytyramine metabolites, in tranylcypromine treated rats. The amine was not excreted unchanged. The major metabolites were identified as conjugates of methylenedioxyphenylacetic acid, homovanillic acid and dihydroxyphenylacetic acid. The latter were derived by the further metabolism of conjugated methylenedioxyphenylacetic acid. Administered tranylcypromine doubled the excretion of conjugates of labeled dopamine and 3-methoxytyramine. NADPH served as a cofactor for the microsomal demethylenation of the amine. 13 references. (Author abstract)

001330 Scuvee-Moreau, J.; Fischer, P.; Dresse, A. Institut de Pathologie, Laboratoire de Pharmacologie, Universite de Liege, B-4000 Sart Tilman par Liege 1, Liege, Belgium **Effect of tricyclic antidepressant drugs on spontaneous activity of noradrenergic**

neurons. Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 234(2):344-345, 1978.

At the meeting of the Belgian Physiological and Pharmacological Society, held in Liege, Belgium, May 1978, a paper was presented. The spontaneous activity of noradrenergic cells in the locus coeruleus (LC) were recorded extracellularly following intravenous infusion of tricyclic antidepressant drug in rats. The tricyclics reduced the frequency of discharges, probably through a feedback mechanism related to the accumulation of the transmitter at the synaptic level. The secondary aminated antidepressants (norimipramine and nortriptyline), which are more active inhibitors of noradrenaline uptake in vitro than their tertiary aminated analogue (imipramine, chlorimipramine and amitriptyline) also had more potent effects on spontaneous firing of noradrenergic LC cells. The doses needed to depress the firing of LC neurons to 50% of control value were 0.29mg/kg for norimipramine, 1.42mg/kg for amitriptyline, 0.66mg/kg for nortriptyline, 1.3mg/kg for imipramine, and 3.08mg/kg for chlorimipramine. It is concluded that noradrenergic LC neurons are extremely sensitive to the action of tricyclic antidepressant drugs.

001331 Segawa, Tomio; Murakami, Hiroko; Ogawa, Hiroshi; Yajima, Haruaki. Department of Pharmacology, Institute of Pharmaceutical Sciences, Hiroshima University School of Medicine, Hiroshima 734, Japan **Effect of enkephalin and substance P on sympathetic nerve transmission in mouse vas deferens.** Japanese Journal of Pharmacology (Kyoto). 28(1):13-19, 1978.

The effects of methionine-enkephalin, leucine-enkephalin, and substance-P on the transmission in mouse vas deferens were studied. Both enkephalins inhibited electrically induced contractions of vas deferens, with methionine-enkephalin being 1.4times more active than leucine-enkephalin. Nalorphine antagonized these effects. Substance-P had no effect on the contraction. The enkephalins decreased the potassium evoked release of tritiated norepineprhine from vas deferens, whereas substance-P increased it. Nalorphine reversed the inhibitory effect of methionine-enkephalin on norepinephrine release. Results indicate that these peptides modify the transmission of sympathetic nerves in mouse vas deferens. 18 references. (Author abstract modified)

001332 Segawa, Tomio; Murakami, Hiroko; Inouye, Akemi; Tanaka, Yasue. Department of Pharmacology, Institute of Pharmaceutical Sciences, Hiroshima University School of Medicine, Hiroshima 734, Japan **Effect of reserpine, ouabain and p-chloromercuribenzoate on the release of 5-hydroxytryptamine from rat brain synaptosomes.** Japanese Journal of Pharmacology (Kyoto). 28(1)158-160, 1978.

The effects of reserpine, ouabain, and p-chloromercuribenzoate (PCMB) on the release of 5-hydroxytryptamine (5-HT) from male Wistar rat brain synaptosomes were studied in vitro. Reserpine (0.00001M) increased both the spontaneous and potassium evoked release of 5-HT, but the increase in spontaneous release was nonsignificant. In a concentration of 0.0001M, ouabain did not affect spontaneous or potassium evoked release, but at 0.001M ouabain increased spontaneous release and attenuated potassium evoked release. PCMB did not affect spontaneous or potassium evoked release at 0.0001M, but at 0.001m PCMB markedly increased spontaneous release and decreased potassium evoked release of 5-HT. The concentration of PCMB required to affect the 5-HT release was one order higher than that required to inhibit adenosine triphosphatase (ATPase), indicating that the effect of PCMB on 5-HT release does not involve ATPase. 10 references.

001333 Sgaragli, G. P.; Carla, V.; Magnani, M.; Giotti, A. Istituto Interfacolta di Farmacologia e Tossicologia Viale G. B. Morgagni, 65, I-50134 Firenze, Italy **Homotaurine and muscimol mimic taurine and GABA effects on muscle tone and temperature regulation.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 305(2):155-158, 1978.

Taurine, homotaurine, gamma-aminobutyric acid (GABA), and muscimol, administered intraventricularly to conscious, unrestained rabbits, produced hypothermia and a reduction in skeletal muscle tone. Taurine and homotaurine desynchronized areas of the motor and limbic cortices, while GABA and muscimol synchronized both EEG tracings and markedly depressed the arousal reaction to external stimuli. Results suggest that exogenous GABA and taurine interact with different neuronal pathways to exert their effects on temperature and muscle tone regulation. 20 references. (Author abstract modified)

001334 Sherman, Kathleen A.; Zigmond, Michael J.; Hanin, Israel. Department of Psychology, University of Pittsburgh, Pittsburgh, PA 15260 **High affinity choline uptake in striatum and hippocampus: differential effects of treatments which release acetylcholine.** Life Sciences (Oxford). 23(17/18):1863-1870, 1978.

The effects of treatments known to release acetylcholine (ACh) on high affinity choline (Ch) uptake in the striatum and hippocampus of male Sprague-Dawley rats were studied. Ch uptake into synaptosome rich P2 fractions was measured after the systemic adminstration of pentylenetetrazol (75mg/kg) or fluphenazine (0.5or 5mg/kg). Pentylenetetrazol increased the uptake of Ch into hippocampal fractions by 45% but had no effect on striatal Ch uptake. Fluphenazine increased ACh release in the striatum without altering Ch uptake by striatal tissue fractions. Ch uptake was then measured after P2 fractions were incubated in a depolarizing, high potassium Krebs-Ringer phosphate buffer. This treatment increased hippocampal Ch uptake by 150% but increased uptake into striatal tissue by only 31%. These results suggest that in vitro Ch uptake is considerably less responsive in striatum than in hippocampus to the effects of prior alterations in ACh release. It is concluded that ACh synthesis may be regulated differently in the two brain regions. 38 references. (Author abstract modified)

001335 Shin, S. H. Department of Physiology, Abramsky Hall, Queen's University, Kingston, Ontario, Canada K7L 3N6 **Thyrotrophin releasing hormone (TRH) is not the physiological prolactin releasing factor (PRF) in the male rat.** Life Sciences (Oxford). 23(17/18):1813-1818, 1978.

The relationship between plasma thyroid stimulating hormone (TSH) and prolactin concentrations was investigated in young male Sprague-Dawley rats to determine whether the stimulatory effect of thyrotropin releasing hormone (TRH) on prolactin secretion is a physiological or pharmacological action. Ether stress elevated plasma prolactin to more than three times the normal concentration without affecting plasma TSH. However, TRH raised plasma TSH to more than five times the normal concentration, with only marginal elevation of plasma prolactin concentration. The dissociation between the elevation of plasma TSH and prolactin concentrations with ether stress and TRH injection indicates that TRH is not the physiological PRF. 27 references. (Author abstract modified)

001336 Shivers, Brenda D. Department of Physiology, University of Texas Health Science Center, Dallas, TX 75235 **Failure of urethane anesthetic to block induction of pineal serotonin N-acetyltransferase activity in the rat.** Brain Research Bulletin. 3(6):579-581, 1978.

Urethane anesthesia (1.2g/kg i.p.)had no effect on the induction of pineal serotonin N-acetyltransferase (SNAT) activity in Sasco rats. This finding indicates that the neural activity of structures involved in the induction of SNAT activity, such as

the suprachiasmatic nucleus, is not substantially altered by urethane. The results also suggest that the central blockade of ovulation by urethane does not include alterations in suprachiasmatic nucleus activity. 27 references. (Author abstract modified)

001337 Simantov, Rabi. Department of Genetics, Weizmann Institute of Science, Rehovot, Israel **Basal and potassium stimulated, calcium dependent, endorphins release from pituitary cells.** Life Sciences (Oxford). 23(22):2503-2508, 1978.

The release of endorphins from AtT mouse pituitary tumor cells grown in tissue culture was studied under various ionic conditions. These cells released endorphins spontaneously into the culture medium. Depolarization of the cells by incubation in a high potassium ion concentration (56mM) increased the release of endorphins by 2-3-fold. The potassium evoked release was calcium dependent: removal of calcium ions inhibited the potassium evoked release of endorphins by 90%, and ethyleneglycol-bis-(beta-aminoethyl ether)N,N'-tetraacetic acid inhibited the release of endorphins in the presence of high potassium and calcium ion concentrations. It is suggested that dual regulatory systems inhibit and/or stimulate the in vivo release of endorphins from the pituitary glands. 30 references. (Author abstract modified)

001338 Sithichoke, Nuannoi. University of Illinois at the Medical Center **Cholinergic influences on the hypothalamic-pituitary-adrenocortical system. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7804342, HC$15. MF$7.50. 108 p. 1977.

The effects of the neurotransmitter acetylcholine (ACh) on hypothalamic-pituitary-adrenocortical (HPA) activity was investigated using cholinergic agonists and antagonists during basal and stressful conditions. The specificity of the agents in acting on either nicotinic (n) or muscarinic (m) receptors allowed the distinction of the effects of ACh on these receptors. Central and peripheral action were obtained by administering these agents intracerebroventricularly and intraperitoneally, respectively. Stress was induced by exposing male rats for 1 hour to either mixed noise of 100 db or 9% CO2 in 20% O2 and 71% N2. Another approach employed the restriction and/or supplementation of choline in the diet. The results indicate that in the basal state a mildly tonic cholinergic inhibition on the HPA is mediated through m receptors. During neural stress, the HPA system is activated by relaxing the m inhibitory system and activating the n excitatory system. (Journal abstract modified)

001339 Slotkin, Theodore A.; Seidler, Frederic J.; Whitmore, William L. P. O. Box 3813, Duke University Medical Center, Durham, NC 27710 **Methadone inhibits serotonin and norepinephrine uptake into rat brain synaptosomes and synaptic vesicles in vitro but not in vivo.** European Journal of Pharmacology (Amsterdam). 49(4):357-362, 1978.

Methadone in vitro inhibited biogenic amine uptake into synaptosomes from male Sprague-Dawley rat whole brain; the mean inhibitory concentration was 0.1-1microM for 5-hydroxytryptamine (5-HT) uptake and 10microM for norepinephrine (NE) uptake, when the 5-HT or NE concentration was 0.05microM. Methadone in vitro also inhibited uptake of NE into rat brain synaptic vesicles, to the same extent that it inhibited synaptosomal NE uptake. In all cases, morphine was much less effective than methadone in blocking uptake in vitro. However, in vivo acute or chronic administration of methadone to rats failed to cause inhibition of synaptosomal 5-HT or NE uptake or of vesicular NE uptake. Amine uptake in situ was also unaffected by methadone, as evidenced by normal incorporation of intracisternally administered (3H)5-HT into synaptic endings. These data show that the inhibition of synaptosomal and vesicular biogenic amine turnover caused by methadone in vitro is probably not a major determinant of the alterations in biogenic amine turnover caused by methadone administration. 29 references. (Author abstract modified)

001340 Slotkin, Theodore A.; Whitmore, William L.; Salvaggio, Maria; Seidler, Frederic J. Department of Pharmacology, Duke University Medical Center, Durham, NC 27710 **Perinatal methadone addiction affects brain synaptic development of biogenic amine systems in the rat.** Life Sciences (Oxford). 24(13):1223-1229, 1979.

Administration of methadone to pregnant and nursing Sprague-Dawley rats or direct treatment of developing pups with methadone resulted in deficits in development of body weight, brain weight, and synaptosomal uptake of 5-hydroxytryptamine, dopamine, and norepinephrine. Defective synaptic development was most apparent immediately after birth; some recovery occurred by 3 weeks of age, but there was a subsequent deficit in synaptosomal uptake postweaning. A similar pattern was seen in the development of synaptic vesicles. Direct treatment of neonantes with methadone caused reductions in development of synaptosomal and vesicular uptake mechanisms, bu the patterns of alteration were different from those in the maternal treatment group. Results indicate that the adverse effects of opiates on general brain growth are accompanied by a slowing of synpatic development of biogenic amine systems. 26 references. (Author abstract modified)

001341 Smith, D. F. Psychopharmacology Research Unit, Psychiatric Hospital, Risskov, Denmark **The effects of lithium on phenylethylamine behavior in rats are counteracted by monoamine oxidase A and B inhibitors.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 233(2):221-226, 1978.

Rats given a subcutaneous injection of beta-phenylethylamine (PEA) (30 or 60mg/kg) showed stereotyped behavior and autonomic effects which were suppressed by LiC1. Inhibition of Type A monoamine oxidase (MAO) by clorgyline or Lilly 51641 (2 or 8mg/kg) or of Type B MAO by l-deprenyl (2 or 8mg/kg) counteracted the suppressant effects of LiC1 on PEA behavior. Findings suggest that both Type A MAO and Type B Mao play a role in the effects of LiC1 on PEA behavior. 15 references. (Author abstract)

001342 Smith, Robert C.; Leelavathi, Doddamane E. Section of Behavioral Neurochemistry, Texas Research Institute of Mental Sciences, Texas Medical Center, Houston, TX **Interaction of age and the effect of chronic neuroleptic drugs in the rat: relevance to tardive dyskinesia in man.** Psychopharmacology Bulletin. 14(4):70-72, 1978.

In a paper presented at the session on basic issues in tardive dyskinesia, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the relevance to tardive dyskinesia in man of animal studies of the effects of age and chronic neuroleptic drugs is reviewed. A series of studies undertaken to assess whether studies in older age animals will provide a better model of tardive dyskinesia and to investigate the interaction of age and the effect of chronic neuroleptic drugs is described. Preliminary findings suggest the importance of biochemical and morphological changes in presynaptic neurons which may mediate the toxic effects of chronic neuroleptic drugs in animals and man. 9 references.

001343 Spano, P. F.; Biggio, G.; Casu, M.; Gessa, G. L.; Bareggi, S. R.; Govoni, S.; Trabucchi, M. Institutes of Pharmacology, University of Cagliari, Cagliari, Italy **Interaction of metergoline with striatal dopamine system.** Life Sciences (Oxford). 23(24):2383-2391, 1978.

The action of metergoline, an ergot derivative, on dopamine (DA) metabolism, DA stimulated adenylate cyclase and dopamine receptor binding in the rat and mouse brain was examined. The intragastric or intraperitoneal administration of metergoline (2.5-10mg/kg) stimulated dopamine synthesis. In vitro, metergoline blocked DA sensitive adenylate cyclase and displaced H3-haloperidol from specific binding sites in striatal homogenates. 31 references. (Author abstract modified)

001344 Sprague, G. L.; Fong, D. W.; Castles, T. R. Dept. of Pharmacology, University of Minnesota Health Sciences Center, 105 Millard Hall, Minneapolis, MN 55455 **Alteration of brain chromatin and nuclear synthetic activity in morphine-tolerant rats.** Research Communications in Chemical Pathology and Pharmacology. 19(3):553-556, 1978.

RNA incorporation by intact, isolated brain nuclei from morphine treated rats was measured and physical changes in brain chromatin evaluated. 3H-UTP incorporation by endogenous RNA polymerase of intact, isolated rat brain nuclei was enhanced by chronic morphine treatment. Analgesic tolerance using the hot plate assay was also evident. Fractionation profiles for brain chromatin on hydroxylaptite from morphine and vehicle treated rats was different. These results suggest that morphine tolerance in the rat may be accompanied by enhanced nuclear synthesis of a new species of RNA. 10 references. (Author abstract modified)

001345 Starke, K.; Reimann, W.; Zumstein, A.; Hertting, G. Pharmakologisches Institut, Universitat Freiburg, Hermann-Herder-Strasse 5, D-7800 Freiburg i. B., Germany **Effect of dopamine receptor agonists and antagonists on release of dopamine in the rabbit caudate nucleus in vitro.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 305(1):27-36, 1978.

The effects of dopamine receptor agonists and antagonists on the release of dopamine were studied in the caudate nucleus of the rabbit. Results indicate that, in the caudate nucleus of the rabbit, apomorphine and bromocriptine depress, whereas chlorpromazine and haloperidol facilitate action potential evoked release of dopamine. The effects are mediated by specific receptors which may be located on the dopaminergic nerve terminals. 30 references. (Author abstract modified)

001346 Starr, Michael S. School of Pharmacy, University of London, 29/39 Brunswick Square, London WC1N 1AX, England **Investigation of possible interactions between substance P and transmitter mechanisms in the substantia nigra and corpus striatum of the rat.** Journal of Pharmacy and Pharmacology (London). 30(6):359-363, 1978.

The effect of substance P (SP) on the uptake and release of radiolabelled dopamine (3H-DA), 5-hydroxytryptamine (3H-5-HT), and gamma-aminobutyric acid (3H-GABA) was studied in slices of male Wistar rat substantia nigra and corpus striatum. SP failed to modify the uptake or spontaneous release of these compounds in either brain region. In the corpus striatum, SP seemed to potentiate the potassium stimulated outflow of 3H-DA and 3H-5-HT, but not of 3H-GABA; release of these compounds from the substantia nigra was not affected. Morphine, but not met-enkephalin, weakly antagonized the potassium evoked release of 3H-DA in the corpus striatum. Results are discussed with reference to the possible interaction of SP with transmitter mechanisms at presynaptic sites in the CNS. 37 references. (Author abstract modified)

001347 Steigrad, P.; Tobler, I.; Waser, P. G.; Borbely, A. A. Pharmakologisches Institut der Universitat Zurich, Gloriastrasse 32, CH-8006 Zurich, Switzerland **Effect of p-chlorophenylalanine on cerebral serotonin binding, serotonin concentration and motor activity in the rat.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 305(2):143-148, 1978.

A single dose of p-chlorophenylalanine (PCPA, 300mg/kg i.p.)increased the specific binding of tritiated 5-hydroxytrtytamine (5-HT) to crude membrane preparations of male Sprague-Dawley rat forebrain by more than 100% within 24 hours. The time course of the elevation of specific binding was reflected in the reduction in cerebral 5-HT level. However, 8-l0 days after drug administration, specific binding was close to the control level, but cerebral 5-HT levels were still significantly reduced. A Scratchard analysis revealed that the apparent affinity was significantly increase (the dissociation constant or Kd was reduced) during the initial period after PCPA administration, but the number of binding sites (Bmax) was little changed. In contrast, after repeated injections of PCPA (three in- jections of 300mg/kg at 6-8 day intervals or 100mg/kg/day for 12 days) leading to a prolonged 5-HT depletion, Bmax was significantly increased and the Kd tended to be restored to baseline level. Daily injections of PCPA 100mg/kg) for 12 days resulted in a transitory increase in daytime motor activity with a maximum on drug day 3 and a persistent reduction of nighttime activity. It is concluded that the initial PCPA induced decrease in Kd was due to a reduced competition for binding sites by endogenous 5-HT, whereas the increase of Bmax after prolonged 5-HT depletion may reflect 5-HT receptor supersensitivity. 21 references. (Author abstract modified)

001348 Stickney, J. L. Department of Pharmacology, Michigan State University, East Lansing, MI 48824 **Effect of autonomic blocking agents on chronotropic actions of 1-alpha-acetylmethadol.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 231(1):70-80, 1978.

Autonomic receptors were investigated to determine whether they are involved in the chronotropic responses to 1-alpha-acetylmethadol (LAAM) and congeners (1-alpha-acetylnormethadol, norLAAM; 1-alpha-acetyldinormethadol, dinorLAAM). The effects of atropine were studied in vitro using isolated guinea-pig right atria and in vivo in anesthetized dogs. The effect of d,1-propranolol, abeta-adrenergic receptor blocking agent was studied in vitro only. Atropine attenuated, but did not block completely, the negative chronotropic responses to the narcotic agonists. Propranolol blocked completely the positive chronotropic response to norLAAM and appeared to increase the negative chronotropic response to dinorLAAM. It is concluded that: l) muscarinic cholinergic receptors play a role in the negative chronotropic response and 2) the positive chronotropic response to norLAAM involves activation of beta-adrenergic receptors. 8 references. (Author abstract)

001349 Stone, Trevor W.; Taylor, David A. Department of Physiology, St. George's Hospital Medical School, University of London, London SW17 ORE, England **Antagonism by clonidine of neuronal depressant responses to adenosine, adenosine-5'-monophosphate and adenosine triphosphate.** British Journal of Pharmacology (London). 64(3):369-374, 1978.

The effects of clonidine on the responses of single neurons in the cerebral cortex of urethane anesthetized male Porton Wistar rats to adenosine and its nucleotides adenosine-5'-monophosphate (AMP) and adenosine triphosphate (ATP) were investigated. Microiontophoretic application of adenosine, ATP, and AMP depressed the firing rate of most neurons, but two cells showed biphasic responses to ATP consisting of an initiation excitation succeeded by depression. The application of clonidine with iontophoretic currents of less than 25nA resulted in blockade of the depressant response to the purine, without affecting responses to noradrenaline (NA), 5-hydroxytryptamine, or gamma-aminobutyric acid. At much higher doses of clonidine,

direct depression of cell firing occurred and occasional interaction with NA was noted. Clonidine appeared to block only the depressant phase of the biphasic response to ATP. It is concluded that clonidine, like some other 2-substituted imidazoline derivatives, possesses the ability to block responses to purine compounds. 22 references. (Author abstract modified)

001350 Sturman, J. A. Department of Pathological Neurobiology, Institute for Basic Research in Mental Retardation, Staten Island, NY 10314 **Taurine in developing rat brain: changes in blood-brain barrier.** Journal of Neurochemistry (Oxford). 32(3):811-816, 1979.

The fate of (35S)taurine injected ip or intracranially was compared in Nelson-Wistar rats throughout neonatal development. The amount of labeled taurine in the whole rat pup 24 hours after ip injection increased during development to a maximum 15 days after birth and declined thereafter; the amount of (35S)taurine reaching the brain 24 hours after ip injection was greatest in the first 5 days after birth. The amount of (35S)taurine remaining in the brain 24 hours after intracranial injection did not vary throughout the developmental period. Results suggest that the blood/brain barrier is more accessible to taurine in the first few days after birth than later in neonatal development and indicate that factors other than simple exchange are involved. 21 references. (Author abstract modified)

001351 Sun, C. L.; Thoa, N. B.; Kopin, I. J. Laboratory of Clinical Science, NIMH, 10, Bethesda, MD 20014 **Comparison of the effects of 2 deoxglucose and immobilization on plasma levels of catecholamines and corticosterone in awake rats. (Unpublished paper).** Bethesda, MD, NIMH, 1978. 16 p.

The plasma levels of catecholamines and corticosterone in awake rats were studied following administration of 2 deoxyglucose (2DG). These levels increased in response to administration of 2DG and during forced immobilization. There was a similar relationship between dose of 2DG and elevations of plasma levels of epinephrine and corticosterone, but levels of norepinephrine were not increased until higher doses of 2DG were administered. The dose of 2DG which elicited the same corticosterone response as did forced immobilization evoked a greater increase of epinephrine than norepinephrine. During immobilization, more norepinephrine and less epinephrine appeared to be released than 2DG. Results are discussed with reference to the sites in the epinephrine from the adrenal medulla, and norepinphrine from hypothalamus which control release of adrenocorticotropic hormone from the pituitary, sympathetic nerves. 21 references. (Author abstract modified)

001352 Sundaresan, Pavur R.; Rivera-Calimlim, Leonor. Department of Pharmacology and Toxicology, University of Rochester School of Medicine and Dentistry, Rochester, NY 14642 **Mechanism of chlorpromazine action on rat intestinal transport processes.** Biochemical Pharmacology (Oxford). 27(24):2781-2786, 1978.

The mechanism underlying the chlorpromazine (CPZ) induced inhibition of L-methionine transport in the intestine was investigated in male Sprague-Dawley rats. Preincubation studies indicated that the tissue concentration of CPZ was much more important than the medium concentration in inhibiting L-methionine transport. CPZ did not affect diffusional entry of L-methionine at the intestinal brush border. The inhibition of nondiffusional mucosal transport of L-methionine by CPZ was not competitive; CPZ inhibited D-galactose transport in the same time dependent manner as L-methionine transport. No CPZ effect on carrier mediated diffusion of D-xylose was observed. Results suggest that the CPZ effect on active transport processes in the intestine is mediated predominantly within the cell, but it is not clear whether this effect involves inhibition of metabolic energy or inhibition of sodium/potassium ion stimulated adenosine triphosphatase. 29 references. (Author abstract modified)

001353 Swartz, B. E.; Woody, C. D.; Jenden, D. J. Department of Pharmacology, University of California School of Medicine, Los Angeles, CA 90024 **The effects of aceclidine, a muscarinic agonist, on neurons in the sensorimotor cortex of awake cats.** Proceedings of the Western Pharmacological Society. 21:11-17, 1978.

The effect of aceclidine, a muscarinic agonist, on input resistance in the sensorimotor cortex of awake cats was investigated. It was found that 50% of the neurons studied were responsive to aceclidine. It is uncertain whether these results reflect a greater potency for aceclidine or merely greater receptor accessibility due to its more hydrophobic structure. It is concluded that aceclidine is capable of producing transient and persistent increases in input resistance of cortical neurons comparable to those produced by acetylcholine. 10 references.

001354 Syapin, Peter J.; Skolnick, Phil. Laboratory of Preclinical Studies, NIAAA, ADAMHA, 12501 Washington Avenue, Rockville, MD 20852 **Characterization of benzodiazepine binding sites in cultured cells of neural origin.** Journal of Neurochemistry (Oxford). 32(3):1047-1051, 1979.

The binding of tritiated diazepam to benzodiazepine receptors was investigated in cultured cell lines of neural origin. The (3H)diazepam binding to membranes prepared from rat C6 glioma or mouse NB41A3 neuroblastoma was saturable and of a relatively high affinity, compared with binding in rat cerebral cortex. A single class of binding sites in both cell lines was demonstrated by Scatchard analysis. The maximum binding capacities in the C6 and NB41A3 cell lines were 10 and 3.5times higher than in rat cerebral cortex. In contrast to binding in cerebral cortex, binding of (3H)diazepam in cultured cells was not displaced by the clinically active benzodiazepines clonazepam and oxazepam, but the clinically inactive benzodiazepine Ro5-4864 potently inhibited (3H)diazepam binding in both cell lines. Results suggest that benzodizaepine binding sites in cultured cells of neural origin resemble those in peripheral tissue and that benzodiazepine receptors in the CNS may not be confined to a single cell type. 28 references. (Author abstract modified)

001355 Szabadi, E. Department of Psychiatry, University of Manchester, Stopford Building, Oxford Road, Manchester M13 9PT, England **Functionally opposite receptors on neurones.** Life Sciences. 23(19):1889-1897, 1978.

Evidence is reviewed that suggests that there may be some exceptions to the second general principle of chemical neurotransmission, formulated by Eccles, which proposes that a neurotransmitter released from the axonal terminals of a neuron has only one and the same effect on all the follower cells: all the follower cells are either excited or inhibited by it. The coexistence of both excitatory and inhibitory receptors for the same transmitter substance on the same neuronal membrane has been described in invertebrates: opposite receptors can occur for acetylcholine, dopamine, and glutamate. There is also evidence suggesting the existence of opposite receptors for acetylcholine and noradrenaline on neurones in the mammaliam brain. The activation of functionally opposite receptors results in antagonistic agonism: the net pharmacological effect is obtained by the algebraic summation of the two opposing component effects. Both the time course and the polarity of neuronal responses to a given neurotransmitter are influenced by the relationship between the two kinds of receptors. It is suggested that both presynaptic and postsynaptic factors may modify this relationship. 37 references. (Author abstract modified)

001356 Szabadi, E.; Bradshaw, C. M.; Bevan, P. Department of Psychiatry, University of Manchester, Stopford Building, Oxford Road, Manchester M13 9PT, England **Relation between baseline firing rate and the direction of neuronal responses to noradrenaline: a species comparison.** Journal of Pharmacy and Pharmacology (London). 30(6):392-393, 1978.

The relation between baseline firing rate and the direction of responses to noradrenaline was studied in spontaneously active single neurons in the somatosensory cortices of male Wistar rats, and results were compared with previous findings in cats. In both species, about three quarters of the noradrenaline sensitive cells responded with excitation, and only one quarter of the cells responded with depression. In both rat and cat, the direction of the response was related to the baseline firing rates of the neurons: as the firing rate increased, the relative number of excitations decreased and the proportion of depressions increased. Subtle differences between the two species were found, however. Excitatory responses were slightly more common and depressant responses were slightly less common in the cat than in the rat; this difference may be related to the different firing rate distribution of neurons in the two species. 13 references.

001357 Tang, S. W.; Stancer, H. C.; Warsh, J. J. Section on Neurochemistry, Clarke Institute of Psychiatry, Toronto, Canada M5T IR8 **CNS 3-methoxy-4-hydroxyphenylglycol: its peripheral assessment by isotopic dilution and theoretical significance.** Brain Research Bulletin. 3(6):669-674, 1978.

An isotope dilution model for the peripheral measurement of CNS catecholamine metabolism was examined in male Riemans rabbits. Tritiated norepinephrine (3H-NE) was infused before and after central sympathectomy via intraventricular 6-hydroxydopamine (6-OHDA) treatment. Urine samples were obtained 72 hours after 3H-NE infusion and were analyzed for specific activities (SAs) of 3-methoxy-4-hydroxyphenylglycol (MHPG) and 3-methoxy-4-hydroxymandelic acid (VMA). The SA of MHPG was lower than that of VMA in all animals, suggesting a source of unlabeled MHPG. The difference between the SAs of VMH and MHPG was abolished when brain MHPG was markedly lowered by 6-OHDA injections. In animals that received 6-OHDA but retained moderate levels of brain MHPG, the difference between SAs of VMA and MHPG was maintained. Results suggest important relationships between CNS and peripheral NE metabolism and the ability of the CNS to compensate for insult. 32 references. (Author abstract modified)

001358 Tepper, James M.; Wilson, James R.; Schlesinger, Kurt. Department of Psychology, University of Colorado, Boulder, CO 80309 **Relations between nicotine-induced convulsive behavior and blood and brain levels of nicotine as a function of sex and age in two inbred strains of mice.** Pharmacology Biochemistry and Behavior. 10(3):349-353, 1979.

The relationship between blood and whole brain levels of nicotine and drug-induced convulsive behavior were investigated in C57BL/6J and DBA/2J mice following a single ip injection of nicotine. Results indicate that blood levels of nicotine do not accurately predict brain levels of nicotine or behavioral response to the drug. In general, behavioral responses to nicotine could be predicted on the basis of brain levels of the drug. Male animals of both strains concentrated the drug in the brain more than females. However, no corresponding increase in sensitivity to this increased brain concentration was observed in median lethal dose, median effective dose, latency to tremor, or latency to death measures. 8 references. (Author abstract modified)

001359 Thurston, Jean Holowach; Hauhart, Richard E.; Dirgo, John A. Edward Mallinckrodt Dept. of Pediatrics, Washington University School of Medicine, St. Louis, MO 63110 **Aminophylline increases cerebral metabolic rate and decreases anoxic survival in young mice.** Science. 201(4356):649-651, 1978.

The effects of aminophylline on carbohydrate and energy metabolism in the brains of normal 17-day-old to 23-day-old mice were investigated. In weanling mice treated with pharmacologic doses of aminophylline, the concentrations of adenosine 3',5'-monophosphate and guanosine 3',5'-monophosphate in the brain increased 44% and 36%, respectively, and the cerebral metabolic rate was three times that in controls. In neonatal mice, therapeutic doses of aminophylline greatly decreased the rate of anoxic survival in vivo and the duration of gasping of the isolated head. The findings suggest caution in the use of this drug and other methylxanthines in hypoxic human newborns. 24 references. (Author abstract modified)

001360 Tissari, A. H.; Casu, M.; Gessa, G. L. Department of Pharmacology, University of Helsinki, Helsinki, Finland **Chronic haloperidol: tolerance to the stimulating effect on striatal tyrosine hydroxylase.** Life Sciences (Oxford). 24(5):411-416, 1979.

In male Sprague-Dawley rats, chronic treatment with haloperidol (1mg/kg, twice daily for 45 days) caused tolerance to the stimulating effect of the drug on striatal tyrosine hydroxylase activity. Tolerance to this effect persisted as long as 7 days after termination of haloperidol treatment. Rats made tolerant to haloperidol showed cross-tolerance to fluphenazine. 17 references. (Author abstract modified)

001361 Tonon, Giancarlo; Saiani, Laura; Spano, Pier Franco; Trabucchi, Marco. Institute of Pharmacology and Pharmacognosy, University of Milan, Milan I-20129, Italy **Differential effect of reserpine on dopaminergic receptor function in rat substantia nigra and caudate nucleus.** Brain Research (Amsterdam). 160(3):553-558, 1979.

Reserpine-induced dopamine (DA) receptor supersensitivity in the striatum but not in the substantia nigra of male Sprague-Dawley rats. Apomorphine and DA increased the formation of adenosine 3',5'-monophosphate in striatal homogenates but not in substantia nigra homogenates from reserpinized animals. The adenylate cyclase (AC) affinity for DA in the striatum of animals treated with reserpine was about three times greater than that in controls, whereas no changes in AC affinity were detected in the substantia nigra. Reserpine, haloperidol, bromocriptine, and benzotropine had differential effects on the 3,4-dihydroxyphenylacetic acid levels in the striatum and nigra. Results indicate that the supersensitivity observed in the striatum after reserpine treatment is not due to a direct effect of the drug at receptor levels and suggest that synaptic dopaminergic function is regulated by different mechanisms in the striatum and substantia nigra. 29 references.

001362 Trabucchi, M.; Govoni, S.; Tonon, G. C.; Spano, P. F. Department of Pharmacology, University of Brescia, Brescia, Italy **Functional interaction between receptors for dopamine antagonists and GABA central receptors.** Life Sciences (Oxford). 23(17/18):1751-1756, 1978.

At the symposium, ""Receptors of Dopamine Antagonists: New Biochemical Approaches," held in Beerse, Belgium, July 1978, a paper was presented which describes the functional interaction between receptors for dopamine antagonists and gamma-amino butyric acid (GABA) central receptors. The plasticity of GABA receptors was demonstrated in male Sprague-Dawley rats subjected to various pharmacological treatments. Intrastriatal kainic acid injection induced a significant increase of (3H)GABA and 3(H)spiroperidol binding both in the striatum and substantia nigra. A single injection of haloperidol, however, decreased (3H)GABA binding in the striatum and cerebellum in a dose dependent manner, but not in the substantia nigra. Neur-

oleptics such as chlorpromazine and sulpiride induced the same changes in (3H)GABA binding, while clozapine tended to increase the GABA radioreceptor binding. 22 references. (Author abstract modified)

001363 Trofimenko S. P.; Gayevoy, M. D.; Zaytsev. A. A.; Mel'kumov, R. V.; Em, M. A. Kafedra farmakologii, Tselinogradskiy meditsinskiy institut, Tselinograd, USSR **/Influence of adrenaline and ephedrine superimposed on chlorpromazine on systemic, cerebral, and extracerebral hemodynamics./** Vliyaniye adrenalina i efedrina na fone aminazina na obshchuyu, tserebral'nuyu i ekstratserebral'nuyu gemodinamiku. Farmakologiya i Toksikologiya (Moskva). 41(3):299-302, 1978.

A study of the influence of chlorpromazine on the vasopressor action of adrenaline and ephedrine was conducted in anesthetized cats. A total of 48 cats were treated with the three substances. The action of the adrenaline and ephedrine on systemic arterial pressure, and on cerebral and extracerebral tonicity of blood vessels, was found to be perverted by chlorpromazine. It is believed that with chlorpromazine pretreatment the adrenomimetics produce a selective stimulation of the beta-adrenergic receptors. This would account for the observed depressor affect. It is noted that the blood vessels of the brain and the soft tissues of the head show differential sensitivity to adrenaline and ephedrine both before and after such pretreatment. 7 references. (Journal abstract modified)

001364 Tsang, D.; Tan, A. T.; Henry, J. L.; Lal, S. Department of Psychiatry, Montreal General Hospital, Montreal, Quebec H3G IA4, Canada **Effect of opioid peptides on L-noradrenaline-stimulated cyclic AMP formation in homogenates of rat cerebral cortex and hypothalamus.** Brain Research (Amsterdam). 152(3):521-527, 1978.

Endogenous peptides with morphine like activity and their effect on noradrenaline stimulated cyclic adenosine monophosphate (AMP) number formation was studied in homogenates of rat cerebral cortex and hypothalamus. Morphine and the opioid peptides leucine-enkephalin (leu-enk), methionine-enkephalin (met-enk) and beta-endorphin had no effect on basal cyclic AMP levels in rat cerebral cortex and hypothalamus, but each inhibited noradrenaline (NA) stimulated cyclic AMP formation in both brain regions. This inhibition was reversed by naloxone. Naloxone did not reverse phentolamine or propranolol induced inhibition of NA stimulated cyclic AMP formation. The increase in cyclic AMP formation induced by NaF or MnCl2 was unaffected by met-enk or morphine. These data suggest that in rat cerebral cortex and hypothalamus opiates bind to opiate receptors and that the opiate receptor complex interferes with noradrenergic receptor activity. 36 references. (Author abstract modified)

001365 Tsuchiya, Toshiro; Fukushima, Hideaki. Research and Development Center, Pharmaceuticals Division, Sumitomo Chemical Co., Ltd., Takarazuka, Hyogo 665, Japan **Effects of benzodiazepines and pentobarbitone on the GABA-ergic recurrent inhibition of hippocampal neurons.** European Journal of Pharmacology (Amsterdam). 48(4):421-424, 1978.

The effects of benzodiazepines and pentobarbitone on gamma-aminobutyric acid (GABA) mediated recurrent inhibition of hippocampal pyramidal neurons were investigated in immobilized, unanesthetized cats. Extracellular action potentials of single neurons were recorded in regions CA1 or CA2 with 4M sodium chloride containing glass micropipettes. Intravenous bicuculline (0.1mg/kg) reduced the period of inhibition induced by stimulation of the fimbria and septum, but intravenous fludiazepam and diazepam (0.3-1.0mg/kg) and pentobarbitone (15-30mg/kg) prolonged the inhibition. The prolongation produced by these compounds was antagonized by the administration of bicuculline (0.3mg/kg). Results suggest that these two classes of compounds potentiate GABA mediated recurrent inhibition in hippocampal neurons in a similar way. 15 references. (Author abstract)

001366 Tulloch, I. F.; Arbuthnott, G. W.; Wright, A. K.; Garcia-Munoz, M.; Nicolaou, N. M. MCR Brain Metabolism Unit 1, George Square, Edinburgh, Scotland **The striatonigral fibres and the feedback control of dopamine metabolism.** Psychological Medicine (London). 8(3):471-482, 1978.

The role of striatonigral fibers and the feedback control loop of dopamine metabolism in the rat was investigated. Lesions, which interrupted the striatonigral gamma-aminobutyric acid (GABA) containing pathway in the rat brain without causing concomitant damage to the nigorstriatal dopamine containing system, were made. Estimations of striatal concentrations of dopamine, dihydroxyphenyl-acetic acid, and homovanillic acid indicate that these lesions had no influence either on normal striatal dopamine turnover or on the enhancement of dopamine turnover induced by neuroleptics. Behavioral experiments suggested a motor output function for the striatonigral pathway. 68 references. (Author abstract modified)

001367 Ungar, Frieda; Mosnaim, Aron D.; Ungar, Benedict; Wolf, Marion E. Department of Biochemistry, Chicago Medical School, Chicago, IL 60612 **Preliminary studies of the sodium borohydride stabilizable binding of phenylethylamine and tyramine to brain preparations.** Research Communications in Chemical Pathology and Pharmacology. 19(3):427-434, 1978.

The borohydride stabilizable binding of 2-phenylethylamine and p-tyramine to mouse brain homogenates was compared to that of tryptamine and of serotonin. The highest binding was that of tryptamine, followed by serotonin, tyramine, and phenylethylamine. The stabilizable binding of phenylethylamine to calf midbrain homogenates and synaptic membranes was decreased by dopamine. The subsynaptosomal distribution of the binding of phenylethylamine to synaptic calf midbrain fractions was also examined. The highest binding capacity was found in the 0.8M fraction, rich in myelin. 16 references. (Author abstract modified)

001368 Urca, Gideon; Liebeskind, John C. Department of Physiology and Pharmacology, Tel Aviv University School of Medicine, Ramat Aviv, Israel **Electrophysiological indices of opiate action in awake and anesthetized rats.** Brain Research (Amsterdam). 161(1):162-166, 1979.

The effects of an analgesic dose of morphine on multiple unit activity (MUA) in the midbrain periaqueductal gray matter (PAG) of awake and anesthetized male Sprague-Dawley rats were investigated. Intraperitoneal injection of 10mg/kg morphine increased MUA by 14-60% in unanesthetized rats (median increase, 45%), with a mean latency to increase of 10 minutes. Naloxone (1mg/kg) reversed this effect in 6 of 7 animals within 2 minutes. By contrast, morphine substantially decreased MUA in 6 of 10 urethane anesthetized rats; the decrease occurred within 2 minutes of drug administration and varied from 40-100% with a median of 53%. Naloxone rapidly reversed this effect in all cases. Morphine and naloxone failed to affect spontaneous firing frequency in single dorsal raphe neurons in anesthetized or unanesthetized rats. It is suggested that morphine increases MUA in the PAG of urethane anesthetized animals by its soporific action, but increases MUA in this brain area by its analgesic action in unanesthetized rats. 17 references.

001369 Uretsky, Norman J.; Kamal, Linda; Snodgrass, S. Robert. Division of Pharmacology, College of Pharmacy, Ohio State University, Columbus, OH 43210 **Effect of divalent cations on the amphetamine-induced stimulation of (3H)catechol synthesis**

in the striatum. Journal of Neurochemistry (Oxford). 32(3):951-960, 1979.

The effects of divalent cations on the amphetamine-induced stimulation of tritiated catechol synthesis in male rat striatal slices were studied. Amphetamine did not significantly stimulate (3H)catechol synthesis in striatal slices in medium free of divalent cations, but produced a marked stimulation of synthesis when calcium (1.25mM) was added. In the presence of calcium, the amphetamine-induced stimulation was inhibited by high concentrations of magnesium, other divalent cations (barium, strontium, manganese, and cobalt), and verapamil. In medium containing divalent cations, strontium, cobalt, zinc, and magnesium could not support the amphetamine-induced stimulation of (3H)catechol synthesis, but barium significantly stimulated synthesis. The stimulation produced by amphetamine in the presence of manganese was comparable to that observed when calcium was added. Amphetamine did not alter the specific activity of tritiated tyrosine in the tissue in the presence of divalent cations, suggesting that the amphetamine-induced stimulation was due to an increase in tyrosine hydroxylase activity. Calcium and manganese were also able to support the potassium evoked stimulation of (3H)catechol synthesis in striatal slices, but manganese was much less effective than calcium. Results suggest that the entry of specific divalent cations into cells, presumably dopamine neurons, is involved in the action of amphetamine on catechol synthesis in striatum. 40 references. (Author abstract modified)

001370 Uzan, A.; Le Fur, G.; Kabouche, M.; Mitrani, N. Pharmindustrie, Groupe PHARMUKA, 35, quai du Moulin de Cage, F-92231 Gennevilliers, France **Plasma free 5-hydroxytryptamine (5-HT): evidence of an increase induced by LM-5008, a potent 5-HT uptake inhibitor.** Life Sciences (Oxford). 23(13):1317-1324, 1978.

Variations of free and platelet bound 5-HT and 5-hydroxyindole-acetic acid (5-HIAA) concentrations were measured in male Sprague-Dawley rats after a pretreatment with a potent 5-HT uptake inhibitor, LM-5008. When 5-HT platelet uptake was inhibited by single or repeated oral administration of 4-(2-(3-indolyl)ethyl) piperidine (LM-5008), 5-hydroxy-idole-acetic acid (5-HIAA) and 5-HT platelet concentration decreased. An oral administration of LM-5008 (10mg/kg) to rats whose platelets were previously labeled with tritiated 5-HT provoked an increase in plasma free 5-HT and 5-HIAA. The maximum rise in 5-HT occurred at 15 minutes while that of 5-HIAA appeared later (30 minutes). Concurrently, urinary excretion of 5-HT dramatically increased, which indicated that 5-HT metabolism was not stimulated. According to the similarity between blood platelets and tryptaminergic neurons, plasma free 5-HT variations appear to reflect changes of the neurotransmitter level into the synaptic cleft. Moreover, the excess of plasma free 5-HT induced by LM-5008 could improve 5-HT effects on vascular tone and pain. 33 references. (Author abstract modified)

001371 van Wijk, Marijke; Sebens, Jantiena B.; Korf, Jakob. Netherlands Institute for Brain Research, IJdijk 28, Amsterdam, Netherlands **Probenecid-induced increase of 5-hydroxytryptamine synthesis in rat brain, as measured by formation of 5-hydroxytryptophan.** Psychopharmacology (Berlin). 60(3):229-235, 1979.

The effects of probenecid on cerebral 5-hydroxytryptamine (5-HT) synthesis were investigated in male Wistar rats by measuring tryptophan (TP) hydroxylation, which is thought to be the rate limiting step in 5-HT synthesis. After injection of probenecid (200mg/kg, i.p.), maximal levels of the drug in brain and serum were reached within 15 minutes, followed by a 50% decrease in serum TP and a 40% increase in brain TP. Brain levels of probenecid were about 10 times lower than those in serum. When probenecid was administered in combination with an aromatic L-amino acid decarboxylase inhibitor, TP hydroxylation was enhanced by about 35%. These results suggest that the penetration of probenecid into the brain is very limited and that probenecid stimulated 5-HT synthesis, in addition to blocking egress of the 5-HT metabolite 5-hydroxyindoleacetic acid from the CNS, stimulates 5-HT synthesis. 42 references. (Author abstract modified)

001372 van Wimersea Greidanus, Tjeerd B.; Thody, Tony J.; Verspaget, Hein; de Rotte, Guus A.; Goedemans, Hans J. H.; Croiset, Gerda; van Ree, Jan M. Rudolf Magnus Institute for Pharmacology, University of Utrecht, Medical Faculty, Vondellaan 6, Utrecht, The Netherlands **Effects of morphine and beta-endorphin on basal and elevated plasma levels of alpha-MSH and vasopressin.** Life Sciences (Oxford). 24(7):579-585, 1979.

The effects of intracerebroventricularly or peripherally administered morphine and beta-endorphin on plasma levels of alpha-melanocyte stimulating hormone (alpha-MSH) and vasopressin (AVP) were investigated in male Wistar rats. Morphine increased alpha-MSH levels and decreased AVP levels in nonstimulated animals and in rats with elevated hormone levels due to water deprivation or administration of hypertonic saline. The effects of morphine on plasma levels of alpha-MSH and AVP in the stimulated animals were blocked by simultaneous administration of naltrexone. Beta-endorphin also increased plasma alpha-MSH levels and lowered plasma AVP levels; naltrexone blocked only the increase in plasma alpha-MSH level. Intracerebroventricular administration of Pro-Leu-Gly had no effect on the endorphin-induced decrease in plasma AVP, but partly blocked the beta-endorphin-induced increase in plasma alpha-MSH. 30 references. (Author abstract modified)

001373 Vaught, Jeffry L.; Takemori, A. E. Department of Pharmacology, University of Minnesota Health Sciences Center, Medical School, Minneapolis, MN 55455 **Characterization of leucine and methionine enkephalin and their interaction with morphine on the guinea pig ileal longitudinal muscle.** Research Communications in Chemical Pathology and Pharmacology. 21(3):391-407, 1978.

Using naloxone as the antagonist, a comparison of the pA2 values (the negative logarithm of the affinity constant of the antagonist/receptor interaction) obtained from the guinea-pig ileal longitudinal muscle preparation revealed that leucine enkephalin and methionine enkephalin can be classified as pure narcotic agonists with pA2 values similar to that of morphine, but different from that of nalorphine. Cross-tolerance to both met-enkaphalin and leu-enkephalin could be demonstrated on an ileal strip made tolerant to morphine by implantation of morphine pellets for 72 hours. Pretreatment of a naive muscle strip with three increasing concentrations of leu-enkephalin markedly decreased the median inhibitory concentration (IC50) of morphine and sensitized the ileal strip to naloxone. Met-enkephalin or morphine pretreatment had no effect on subsequent morphine IC50 determinations. Results suggest that leu-enkephalin and met-enkephalin interact with morphine in different ways on the ileal strip. Leu-enkephalin may be an important physiological modulator of narcotic efficiency. 15 references. (Author abstract modified)

001374 Vaupel, D. Bruce; Nozaki, Masako; Martin, William R.; Bright, Lon D. NIDA, Division of Research, Addiction Research Center, Lexington, KY 40583 **Single dose and cross tolerance studies of beta-phenethylamine, d-amphetamine and LSD in the chronic spinal dog.** European Journal of Pharmacology (Amsterdam). 48(4):431-437, 1978.

The effects of beta-phenethylamide (PEA), d-amphetamine, and lysergic acid diethylamide (LSD) on spinal reflexes, autonomic signs, and behavior were investigated in the nontolerant and LSD tolerant (30microg/kg/day) chronic spinal dog. LSD (10microg/kg) facilitated the flexor reflex; produced the stepping reflex; increased respiration, pulse rate, and temperature; dilated pupils slightly; and produced whining, tracking, and restlessness. Direct tolerance developed to all of these effects except temperature. PEA (0.8mg/kg/minute infused for 12 minutes) and amphetamine (3.2mg/kg) facilitated the flexor reflex; increased respiration, temperature, and skin twitch reflex latency; caused marked mydriasis; retracted the nictitating membrane; and produced restlessness and stereotypic head movements. PEA but not amphetamine elicited stepping, and only amphetamine consistently slowed heart rate. Partial tolerance developed only to the actions of PEA on the stepping reflex and the nictitating membrane. The single dose effects and lack of cross tolerance to amphetamine and PEA suggest modes of action different from those of LSD. 15 references. (Author abstract)

001375 Vijayalakshmi, Venkataraman; Lele, Jayashree V.; Daginawala, Hatim F. University Department of Biochemistry, Nagpur University, Nagpur, India **Effect of prostaglandin A1, E2 and F2alpha on the monoamine oxidase (MAO) activity in rat liver and brain.** Biochemical Pharmacology (Oxford). 27(24):2961-2962, 1978.

Subcutaneous administration of prostaglandins (150mcg) twice a day for 10 days significantly increased monoamine oxidase (MAO) activity in the brain and liver of Norwegian rats. This increase was observed with all prostaglandins tested (PGA1, PGE2, and PGF2alpha), with either serotonin or tyramine as substrates. Results suggest that migraine headaches induced by prostaglandins may be due to a depletion of amines brought about by an increase in MAO activity. 13 references.

001376 VonVoigtlander, P. F.; Lewis, R. A. Upjohn Company, Kalamazoo, MI 49001 **In vivo disposition and metabolism of enkephalins: relationship to analgesic properties.** Research Communications in Chemical Pathology and Pharmacology. 20(2):265-274, 1978.

In vivo concentrations of two enkephalins, Met5-enkephalin and D-Ala2-Met5-enkephalinamide, were compared to determine whether the rapid metabolism of Met5-enkephalin is solely responsible for its poor analgesic effect. After intravenous injection, both Met5-enkephalin and D-Ala2-Met5-enkephalinamide rapidly entered the brains of mice, and both peptides obtained similar concentrations. The t-1/2 for D-Ala2-Met5-enkephalinamide in the brain (0.7minutes) corresponds roughly to its analgesic t-1/2 (1.7minutes); thus, rapid metabolism appears to account for the short duration of analgesia seen with this compound. Met5-enkephalin, on the other hand, although attaining similar brain concentrations, failed to elicit analgesia. Rapid metabolism alone does not account for this lack of analgesic effect. 12 references. (Author abstract modified)

001377 Waddingham, Stephanie; Riffee, W. R.; Belknap, J. K.; Sheppard, J. R. University of Michigan Medical School, Dept. of Human Genetics, Ann Arbor, MI 48109 **Barbiturate dependence in mice: evidence for beta-adrenergic receptor proliferation in brain.** Research Communications in Chemical Pathology and Pharamacology. 20(2):207-220, 1978.

C57BL/6J and DBA/2J inbred mice were assayed for beta-adrenergic receptor density following 7 days of chronic phenobarbital intoxication. These physically dependent mice showed a greater brain receptor density than did the controls, while acute intoxication to phenobarbital produced no significant effects. C57BL/6J mice showed a higher average receptor density than did the DBA/2J mice under all conditions. These findings support the hypothesis that chronic barbituarate intoxication leads to a receptor supersensitivity which may play a role in the phenomena of functional tolerance and physical dependence. 18 references. (Author abstract)

001378 Waddington, J. L.; Owen, F. Division of Psychiatry, Clinical Research Centre, Watford Road, Harrow, HA1 3UJ, Middlesex, England **Stereospecific benzodiazepine receptor binding by the enantiomers of oxazepam sodium hemisuccinate.** Neuropharmacology (Oxford). 17(3):215-216, 1978.

The ability of the enantiomers of oxazepam sodium hemisuccinate to displace 3H diazepam specifically bound to benzodiazepine receptors was investigated in crude synaptosomal preparations from rat brain. Both () and (-) oxazepam displaced diazepam binding but with different potencies. The () enantiomer was about 10 times as effective as the (-) in producing 50% inhibition of 3H diazepam binding. These relative potencies are consistent with the reported differential anticonvulsant activities in animals and anxiolytic effects in man. 9 references. (Author abstract modified)

001379 Walczak, Stanley A.; Wilkening, Doug; Makman, Maynard H. Department of Molecular Pharmacology and Biochemistry, Albert Einstein College of Medicine, Bronx, NY 10461 **Interaction of morphine, etorphine and enkephalins with dopamine-stimulated adenylate cyclase of monkey amygdala.** Brain Research (Amsterdam). 160(1):105-116, 1979.

The interaction of synthetic opiates and enkephalins with the rhesus monkey amygdaloid adenylate cyclase (AC) system was examined. The AC activity of amygdaloid homogenates was approximately doubled in the presence of 10mcM dopamine. Morphine, etorphine, and several enkephalin analogs (met-enkephalin, D-ala2-met-enkephalin, and D-met2,pro5-enkephalinamide) inhibited the stimulation of AC by dopamine. Unlike morphine and etorphine, the peptides exhibited bell shaped dose response curves for this inhibition, with maximal effects at approximately 0.0000001M and negligible effects at 0.00001M. Only etorphine inhibited basal AC. Naloxone antagonized the inhibitory effects of each of the opioids tested, and dextrophan, an inactive L-() opiate, failed to inhibit the dopamine response. These findings indicate that the effects were mediated via the classically described stereospecific opiate receptor. The narcotic receptor interaction with AC appeared to be distinct from and more labile than that of the dopamine receptor. 46 references. (Author abstract modified)

001380 Waldmeier, Peter C.; Fehr, Bruno. Research Department, Pharmaceuticals Division, Ciba-Geigy AC, Basel, Switzerland **Effects of baclofen and gamma-hydroxybutyrate on rat striatal and mesolimbic 5-HT metabolism.** European Journal of Pharmacology (Amsterdam). 49(2):177-184, 1978.

The effects of D,L-baclofen and gamma-hydroxybutyric acid (GHBA) on endogenous 5-hydroxytryptamine (5-HT), 5-hydroxyindoleacetic acid (5-HIAA), and dopamine (DA) concentrations in the striatum and mesolimbic area were investigated in female Tif:RAIf (SPF) rats. Both baclofen (5-50mg/kg) and GHBA (300-1500mg/kg) led to dose dependent increases in striatal levels of 5-HT and 5-HIAA by up to 200%. Maximal effects of both drugs occurred about 3 hours after treatment. Normalization was reached 6 hours after GHBA and 16 hours after baclofen. The effect of GHBA in the mesolimbic area was qualitatively similar to, but weaker than, its effect in the striatum. Baclofen had little or no effect in the mesolimbic area, the cortex, or the brainstem. The two drugs affected striatal 5-HT and DA metabolism similarly. It is suggested that the drug ef-

fects on striatal DA metabolism are due to cessation of impulse flow, while the effects on striatal 5-HT may be related to more complex phenomena. 28 references. (Author abstract)

001381 Wallis, D. I.; North, R. A. Dept. of Physiology, University College, P.O. Box 78, Cardiff CF1 1XL, England **The action of 5-hydroxytryptamine on single neurones of the rabbit superior cervical ganglion.** Neuropharmacology (Oxford). 17(12):1023-1028, 1978.

Intracellular recordings were made from neurons in the New Zealand white rabbit superior cervical ganglion maintained in vitro and exposed to 5-hydroxytryptamine (5-HT) via superfusion or iontophoresis. Perfusion of the whole ganglion with 5-HT produced inconsistent and small effects, but iontrophoretic application of 5-HT induced a depolarization in the majority of neurons. The deplorization was accompanied by a fall in input resistance. The amplitude of the 5-HT potentials was related to the magnitude or duration of the ejection current. The amplitude of the 5-HT potential was augmented by hyperpolarization and decreased by depolarization of the soma membrane of the ganglion cell; it appeared to be linearly related to membrane potential. Iontophoretic responses were reduced in amplitude by superfusion of the ganglion with 5-HT (1 or 50mcM) and by cyproheptadine (50mcM), but unaffected by hexamethonium (500 mcM) and by cyproheptadine (50mcM), but unaffected by hexamethonium (500 mcM). Tachyphylaxis was apparent when iontophoretic applications were repeated at frequencies of 0.1Hz or greater. 15 references. (Author abstract modified)

001382 Walton, Kenneth G.; Liepmann, Peter; Baldessarini, Ross J. Laboratories for Psychiatric Research, Mailman Research Center, McLean Division of Massachusetts General Hospital, Belmont, MA 02178 **Inhibition of dopamine-stimulated adenylate cyclase activity by phenoxybenzamine.** European Journal of Pharmacology (Amsterdam). 52(2):231-234, 1978.

Phenoxybenzamine at a concentration of 0.0002M produced half maximal inhibition of dopamine stimulated adenylate cyclase acitivity in homogenates of male Sprague-Dawley rat striatum. Inhibition was sharply dependent on time and temperature of preincubation with the inhibitor. When included in the preincubation medium, dopamine was nearly eight times more effective than norepinephrine in protecting against this inhibition, whereas neither isoproterenol nor methoxamine appeared to protect at all. Results suggest a direct and possible irreversible interaction of phenoxybenzamine with the dopamine binding component of the adenylate cyclase. 11 references. (Author abstract)

001383 Wamsley, James K.; West James R.; Black, Asa C., Jr.; Williams, Terence H. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins School of Medicine, 725 North Wolfe Street, Baltimore, MD 21205 **Muscarinic cholinergic and preganglionic physiological stimulation increase cyclic GMP levels in guinea-pig superior cervical ganglia.** Journal of Neurochemistry (Oxford). 32(3):1033-1035, 1979.

Incubation of guinea-pig superior cervical ganglia in 500mcM carbachol for 2 minutes increased cyclic guanosine monophosphate (GMP) levels 530% over control values. The increase was blocked by prior incubation in 300mcM atropine. No increase in cyclic GMP levels was observed after incubation in 100mcM L-norepinephrine. Preganglionic physiological stimulation for 8 minutes at 10 Hz increased cyclic GMP levels 180% over control values. It is concluded that muscarinic cholinergic and preganglionic physiological stimulation both increase cyclic GMP levels in guinea-pig superior cervical ganglia, but norepinephrine does not. 17 references. (Author abstract)

001384 Wechsler, L. R.; Savaki, H. E.; Sokoloff, L. Laboratory of Cerebral Metabolism, National Institute of Mental Health, Bethesda, MD 20014 **Effects of delta- and lambda-amphetamine on local cerebral glucose utilization in the conscious rat.** Journal of Neurochemistry (Oxford). 32(1):15-22, 1979.

The (14C)deoxyglucose method was used to explore for changes in metabolic rate produced by delta-amphetamine and lambda-amphetamine (5mg/kg) in 40 gray and 4 white matter structures in normal conscious rats. Delta-amphetamine produced increases in local cerebral glucose utilization in a number of components of the extrapyramidal motor system, as well as in some other structures known to contain dopamine producing and/or dopaminoceptive cells. The largest increases after delta-amphetamine administration occurred in the subthalamic nucleus and the zona reticulata of the substantia nigra. Lambda-amphetamine produced increases in some but not all of these same structures, and these were generally smaller than those observed with delta-amphetamine. Decreases in local cerebral glucose utilization after either delta-amphetamine or lambda-amphetamine administration were found in the habenula and the suprachiasmatic nuclei of the hypothalamus. These results indicate that amphetamines may influence behavior through effects on specific regions of the brain. 31 references. (Author abstract modified)

001385 Wecker, Lynn; Dettbarn, Wolf-D. Department of Pharmacology, Louisiana State University Medical Center, 1100 Florida Avenue, New Orleans, LA 70119 **Relationship between choline availability and acetylcholine synthesis in discrete regions of rat brain.** Journal of Neurochemistry (Oxford). 32(3):961-967, 1979.

The relationship between choline availability and the synthesis of acetylcholine (ACh) in discrete brain regions was studied in male Sprague-Dawley rats treated with the organophosphorus cholinesterase inhibitor paraoxon. Subcutaneous administration of 0.23mg/kg paraoxon inhibited acetylcholinesterase activity by about 90% in the striatum, hippocampus, and cerebral cortex and increased ACh levels to 149%, 124%, and 152% of control values, respectively. Free choline levels were unaltered by paraoxon in the hippocampus and cerebral cortex, but were significantly decreased in the striatum (74% of control). Pretreatment with choline chloride (60mg/kg ip) 60 minutes prior to paraoxon injection prevented the paraoxon-induced ACh increase from 149% to 177%; choline pretreatment had no significant effect in hippocampus or cerebral cortex. Results indicate that choline increases ACh synthesis in the presence of acetylcholinesterase inhibitors in the striatum but not in the hippocampus or cerebral cortex. It appears that choline generated from the hydrolysis of ACh may play a significant role in the regulation of neurotransmitter synthesis in the striatum but not in the other brain regions studied. 44 references. (Author abstract modified)

001386 Weibel, Stuart Little. Ohio State University **An investigation of the modification of intracranial self-stimulation behavior in the rat by opiate narcotics. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7732005, HC$15. MF$7.50. 152 p. 1977.

The hypothesis that narcotics modify intracranial self-stimulation (ICSS) by virtue of their ability to activate opiate receptors in the central nervous system was investigated. Apparatus for the production of ICSS consisted of a Skinner box and program stimulator. The central origin of the facilitatory and depressant effects of opiates on ICSS response rates was demonstrated by intraventricular administration of levorphanol. Naltrexone administered intraventricularly abolished both components of the peripherally administered levorphanol effect, suggesting that opiate receptors influencing ICSS behavior are localized in

areas proximal to the ventricular system, as are opiate centers which influence analgesia. Possible neurochemical mechanisms for the link between narcotic actions and reward systems are proposed and discussed with reference to the existing literature concerning self-stimulation, self-administration of opiates, and modulation of neurochemical systems by opiates. (Journal abstract modified)

001387 Weiner, Norman. Dept. of Pharmacology, University of Colorado School of Medicine, Denver, CO **The role of pterin cofactor in the regulation of catecholamine synthesis.** Psychopharmacology Bulletin. 14(4):40-44, 1978.

In a paper presented at the session on the biochemistry and potential use of hydroxylase cofactors as an index of aminergic activity at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, research on the role of pterin cofactor in the regulation of catecholamine sysnthesis is reviewed. Although there is some dispute regarding whether the affinity of tyrosine hydroxylase for tyrosine is altered with nerve stimulation, results from several laboratories have supported the notion that enhanced tyrosine hydroxylase activity consequent to nerve stimulation results largely from an enhanced affinity of the enzyme for pterin cofactor. 27 references.

001388 White, W. F.; Nadler, J. V.; Cotman, C. W. Department of Neurosciences, Children's Hospital Medical Center, 300 Longwood Avenue, Boston, MA 02115 **The effect of acidic amino acid antagonists on synaptic transmission in the hippocampal formation in vitro.** Brain Research (Amsterdam). 164:177-194, 1979.

The effects on synaptic efficiency of the putative acidic amino acid antagonists 2-amino-4-phosphonobutyric acid (APB), 2-amino-3-phosphonopropionic acid (APP), 1-hydroxy-3-aminopyrrolidone-2 (HA-966), and glutamic acid diethyl ester (GDEE) were tested by bath application to the Sprague-Dawley rat hippocampal slice preparation. APB and HA-966 reduced the amplitude of the extracellular excitatory postsynaptic potential (EPSP) recorded during stimulation of the perforant path fibers, but APP and GDEE were without effect. APB, APP, and HA-966, but not GDEE, consistently inhibited transmission at Schaffer collateral and commissural synapses. The mossy fiber evoked extracellular EPSP was not affected by these agents. None of the drugs affected the amplitude of presynaptic fiber potentials or antidromic responses, indicating that they probably acted at synapses. APB increased the spontaneous activity of hippocampal pyramidal cells, but not of dentate granule cells, and reduced the duration of recurrent inhibition during the period when pyramidal cell firing was enhanced, suggesting antagonism at the synapse between pyramidal cell and inhibitory interneuron. These findings support suggestions that glutamate serves as a transmitter of the hippocampal perforant path fibers, that aspartate and possibly glutamate mediate transmission at Schaffer commisural synapses, and that neither amino acid serves as transmitter of the mossy fibers. 51 references. (Author abstract modified)

001389 Williams, John T.; North, R. Alan. Neurophysiology Laboratory, Department of Pharmacology, Loyola University Stritch School of Medicine, Maywood, IL 60153 **Effects of endorphins on single myenteric neurons.** Brain Research (Amsterdam). 165(1):57-65, 1979.

Methionine enkephalin, leucine enkephalin, and beta-endorphin were applied in known concentrations to an in vitro preparation of myenteric neurons from the guinea-pig ileum. All three substances caused a rapid, reversible, and dose related inhibition of the firing of myenteric neurons induced and recorded with extracellular suction electrodes. This inhibition of firing occurred at low agonist concentrations (1-300nM) and was reversed by naloxone and a benzomorphan narcotic antagonist. The inhibition persisted in solutions that were completely free of calcium ions, indicating that the effect occurs directly on the neuron from which the recording is made and that calcium ions are not required for this inhibitory action of endorphins on neuronal firing. 40 references. (Author abstract)

001390 Williams, Michael; Risley, Edwin A. Neuropsychopharmacology Section, Merck Institute for Therapeutic Research, West Point, PA 19486 **Characterization of the binding of (3H)muscimol, a potent gamma-aminobutyric acid agonist, to rat brain synaptosomal membranes using a filtration assay.** Journal of Neurochemistry (Oxford). 32(3):713-718, 1979.

The binding of tritiated muscimol, a potent gamma-aminobutyric acid (GABA) agonist, to crude synaptic membranes prepared from rat brain was studied, using a filtration method to isolate membrane bound ligand. Specific binding was saturable and occurred to two binding sites, with equilibrium dissociation constant values of 5 and 30nM. Binding was sodium independent and was enhanced by freezing and by Triton treatment. Regional and subcellular distribution studies and pharmacological characterization of specific (3H)muscimol binding are consistent with binding to the synaptic GABA receptor. 22 references. (Author abstract)

001391 Williams, Michael; Totaro, James A.; Clineschmidt, Bradley V. Neuropsychopharmacology Section, Merck Institute for Therapeutic Research, West Point, PA 19486 **Interaction of 2-(beta-(4-hydroxyphenyl)ethylaminomethyl)tetralone (BE-2254; "HEAT") with catecholamine receptors in rat brain membranes.** Journal of Pharmacy and Pharmacology (London). 30(11):390-391, 1978.

The affinity of 2-(beta-(4-hydroxyphenyl)ethylaminomethyl)tetralone (BE-2254, HEAT) for central alpha-adrenoceptors, beta-adrenoceptors, and dopaminergic catecholamine receptors was examined using the following binding assays: alpha-receptor, binding of (3H)dihydroergocryptine (3H-DHE) and (3H)(2-((2',6'-dimethoxy)phenoxyethylamino)methyl benzodioxan) (3H-WB-4101) to rat cerebral cortical membranes; beta-receptor, binding of (3H)dihydroalprenolol to rat brain crude synaptosomal membranes; and dopamine receptor, binding of (3H)haloperidol to rat caudate membranes. HEAT, haloperidol, and chlorpromazine all interacted with both alpha-receptors and dopamine receptors; HEAT showed a preference for alpha-receptors, while chlorpromazine and haloperidol showed a preference for dopamine receptors. HEAT was about 10 times less potent than phentolamine in inhibiting the binding of 3H-DHE, but was 8 times more potent than phentolamine in the 3H-WB-4101 binding assay, raising the possibility of more than one type of alpha-receptor defined by the binding of these two ligands. It is suggested that the judicious use of HEAT, together with compounds such as haloperidol and dopamine-beta-hydroxylase inhibitors, will be useful in differentiating between noradrenaline and dopamine as the mediators of in vivo effects thought to have an underlying catecholaminergic basis. 11 references.

001392 Williamson, M. J.; Paul, S. M.; Skolnick, P. Neurosciences Program, University of Alabama, School of Medicine, Birmingham, Alabama **Demonstration of (3H) diazepam binding to benzodiazepine receptors in vivo.** Life Sciences. 23(19):1935-1940, 1978.

Specific binding of (3H) diazepam to rat brain membranes in vivo was demonstrated using benzodiazepine receptors labeled with (3H) diazepam following intravenous injections. Binding

was displaceable by coinjection of clonazepam or the pharmacologically active enantiomers of two benzodiazepines, B9 and B10, but was not displaced by equal doses of the pharmacologically inactive enantiomers. Binding of (3H) diazepam in vivo was observed in kidney, liver, and abdominal muscle, but was not stereospecifically displaced in any peripheral tissue studied. The regional distribution of benzodiazepine receptors in the brain was uneven, with specific (3H) diazepam binding being highest in the cerebral cortex and lowest in the pons medulla. Preliminary studies of the subcellular distribution of (3H) diazepam binding demonstrated highest specific binding to synaptosomal membranes. It is concluded that labeling benzodiazepine receptors in rat brain in vivo is feasible. 9 references. (Author abstract)

001393 Wood, Paul L.; Cheney, D. L.; Costa, E. Department of Pharmacology, Merck Frosst Labs., P.O. 1005, Pointe Claire, Dorval 700, Quebec, Canada, H9R 4P8 **Possible mediation by septal GABAergic interneurons of the reduction in turnover rate of acetylcholine elicited by substance P and beta-endorphin in hippocampus. (Unpublished paper).** Bethesda, MD, NIMH, 1978. 25 p.

The relationship between the inhibitory actions of substance-P and beta-endorphin on gamma-aminobutyric acid (GABA) interneurons located in the rat septum was investigated. Using bicuculline as a GABA antagonist, the inhibitory actions of beta-endorphin on hippocampal turnover rate of acetylcholine (TRACh) are blocked, suggesting mediation via the septal GABAergic interneuronal pool. Substance-P inhibition of hippocampal TRACh is independent of this interneuronal pool. Lesions of dopaminergic cell bodies located in area A10 have established that the dopaminergic and beta-endorphin inputs to the septal GABAergic interneurons are independent of each other. 42 references. (Author abstract modified)

001394 Wraae, O. Department of Psychiatry, University Hospital, 5000 Odense C, Denmark **The pharmacokinetics of lithium in the brain, cerebrospinal fluid and serum of the rat.** British Journal of Pharmacology (London). 64(2):273-279, 1978.

Addition of lithium carbonate to the diet of male Wistar rats for 4 days resulted in ratios between lithium in the brain and serum and between the cerebrospinal fluid (CSF) and serum of about 1 and 0.4, respectively. After single intraperitoneal injections of lithium chloride (5mmol/kg), the concentration of lithium in the CSF was greater than that of the brain for 2 hours. Repeated subcutaneous injections of lithium chloride (0.9mmol/kg) resulted in steady state ratios corresponding to those observed when lithium was given in the diet. The rate of elimination from the CSF was intermediate between that of the serum and cerebral tissue until a new equilibrium was reached after about 24 hours. At that time, the ratios between lithium in the brain and serum and in the CSF and serum were increased to about 5 and 0.8, respectively. Results are consistent with passive transfer kinetics of lithium in the CSF and elimination of lithium from the cerebral tissue via the CSF. 18 references. (Author abstract modified)

001395 Wright, D. M.; Barasi, S. Dept. of Physiology, University College, P.O. Box 78, Cardiff CF1 1XL, Wales **Neuronal responses to bradykinin.** Neuropharmacology (Oxford). 17(12):1057-1058, 1978.

In a paper presented at the meeting of the British Association for Psychopharmacology, held in July 1978 at the University of Wales Institute of Science and Technology in Cardiff, the effects of intraarterial injection of bradykinin (1-5mcg/kg) on two populations of central neurons in halothane anesthetized rats are reported. The response of neurons in the spinal cord to bradykinin was positively correlated with response to a substance P analog, eledoisin related peptide. In the substantia nigra, six of seven neurons inhibited by noxious radiant heat were also inhibited by bradykinin. Results suggest that substance P may be involved in spinal pain mechanisms and that neurons in the substantia nigra may be involved in nociceptive processes. 10 references.

001396 Yamamoto, I.; Ho, I. K. School of Pharmacy, Hokuriku University, Kanagawa-Machi, Kanazawa 920-11, Japan **Sensitivity to continuous administration of pentobarbital in different strains of mice.** Research Communications in Chemical Pathology and Pharmacology. 19(3):381-388, 1978.

Responses to pentobarbital by pellet implantation method were compared with respect to cumulative mortality, narcosis and tolerance development in five strains of mice. The strain labeled C3H showed the most susceptibility and sensitivity to pentobarbital, while ICR mice were the most resistant to the treatment. It is suggested that the effects of genetic variation could be of importance for future studies in gaining insight into the mechanism of barbiturate tolerance. 9 references. (Author abstract)

001397 Yamazaki, Masakazu; Tanaka, Chikako; Takaori, Shuji. Department of Pharmacology, Faculty of Medicine, Kyoto University, Kyoto 606, Japan **Significance of central noradrenergic system on harmaline-induced tremor.** Pharmacology Biochemistry and Behavior. 10(3):421-427, 1979.

The role of central norepinephrine (NE) in harmaline-induced tremor was investigated in male Wistar rats. The duration of tremor induced by 10mg/kg ip harmaline was significantly reduced by intraventricular administration of L-threo-3,4-dihydroxyphenylserine (200mcg) and l-NE (50mcg), which increased NE levels in the cerebral cortex, striatum, diencephalon, cerebellum, and brainstem. Electrical stimulation of the locus coeruleus (LC) suppressed harmaline-induced electromyogram activities in the neck muscle. Bilateral LC lesions significantly prolonged the duration of harmaline-induced tremor, and reduced NE levels in the brain. Results indicate that central NE originating in the LC has an inhibitory effect on the development of harmaline-induced tremor, and suggest that NE normally inhibits the tremorogenic mechanism involved in Parkinson's disease. 35 references. (Author abstract modified)

001398 Yanai, Joseph; Rosselli-Austin, Linda; Tabakoff, Boris. Department of Anatomy and Embryology, Hebrew University Hadassah Medical School, Jerusalem, Israel **Neuronal deficits in mice following prenatal exposure to phenobarbital.** Experimental Neurology. 64(2):237-244, 1979.

The effects of prenatal exposure to phenobarbital on neuronal number and size in various brain regions were examined. The brain weights of offspring of female HS/Ibg mice given phenobarbital from gestation day 6 to parturition were 8% less than those of control pups. There were 30% fewer Purkinje cells (26% fewer per square millimeter) in the treated pups than in controls. There was no difference between groups in the number of granule cells in the cerebellum or hippocampus, and the cerebral cortex was not affected by prenatal phenobarbital exposure. Results suggest that phenobarbital affected the prenatally developing large neurons, but not postnatally developing granule cells. 23 references. (Author abstract modified)

001399 Yokel, Robert A. Department of Pharmacology, University of Cincinnati Medical Center, Cincinnati, OH 45267 **The influence of neuroleptics on amphetamine metabolism in the rat and guinea-pig.** Journal of Pharmacy and Pharmacology (London). 30(11):719-720, 1978.

To determine the influence of neuroleptics on amphetamine metabolism, (14C)()-amphetamine sulphate (2mg/kg ip) was injected into male Sprague-Dawley rats and Hartley guinea-pigs 15 minutes prior to intraperitoneal administration of chlorpromazine, perphenazine, thioridazine, thiothixene, haloperidol, pimozide, or ()-butaclamol. Mean brain amphetamine concentrations were determined in animals decapitated 1, 2, or 4 hours after neuroleptic injection. Chlorpromazine delayed the dissappearance from brain of amphetamine in both the rat and guinea-pig, and thioridazine did so in the rat. No other neuroleptics appreciably influenced amphetamine brain concentrations. 18 references.

001400 Zaczek, Robert; Schwarcz, Robert; Coyle, Joseph T. Coyle: Department of Pharmacology, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Long-term sequelae of striatal kainate lesion.** Brain Research (Amsterdam). 152(3):626-632, 1978.

The neurochemical and morphological sequelae of kainate lesion to the rat striatum were studied 9 months after injection of the neurotoxin. Results are presented as a percentage of control values for the lesioned striata based upon the specific activities for enzymes and uptake processes or concentrations for neurotransmitters and receptor binding sites. Marked alterations in the neurochemical and neuroanatomic characteristics of the kainate lesioned striatum occurred between 10 days and 9 months after injection of the toxin. The lesioned striatum underwent atrophy in association with an increase in the specific activity of the presynaptic markers for the GABAergic and cholinergic neurons, although the total amount of these parameters in the striatum remained severely depressed. It is suggested that caution be exercised in interpreting the effects of kainate lesions during the subacute period, since receptor elements and phagocytized membranes are cleared much more slowly than the soluble components of degenerating neurons. Resemblances of the chronically lesioned striatum to the neuropathology of the striatum in Huntington's disease are discussed. 17 references.

001401 Zahniser, Nancy R.; Molinoff, Perry B. Department of Pharmacology, University of Colorado Medical Center, 4200 East Ninth Avenue, Denver, CO 80262 **Effect of guanine nucleotides on striatal dopamine receptors.** Nature (London). 275(5679):453-455, 1978.

The effect of guanine nucleotides (GTP) on the ability of dopamine receptor agonists to compete for (3H)spiroperidol binding sites on rat striatal membranes was examined. The presence of 0.3mM GTP led to a four to fivefold increase in the Kd values for the inhibition of (3H)spiroperidol binding by dopamine receptor agonists. No changes in Kd values were observed for antagonists. Controversy exists as to whether binding studies using labeled neuroleptics such as spiroperidol actually measure dopamine receptors. It is concluded that the finding of an agonist specific effect of GTP supports the hypothesis that (3H)spiroperidol is binding to functional dopamine receptors in the caudate nucleus. 25 references.

001402 Zatz, Martin. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **A pharmacologic approach to the circadian oscillator regulating rat pineal serotonin N-acetyltransferase activity. (Unpublished paper).** Bethesda, MD, NIMH, 1978. 1 p.

The regulation of serotonin N-acetyltransferase (SNAT) activity in the rat was studied through the use of pharmacological agents. It was hypothesized that since, in the rat, environmental lighting affects the oscillating mechanism via the retinohypothalamic projection to the suprachiasmatic nucleus, it should be possible to mimic the effects of light with neuropharmacological agents. Several neuropharmacological agents were shown to mimic the ability of light to rapidly reduce pineal SNAT activity. Carbachol, injected into the cerebral ventricles, was shown to cause a shift in the phase of pineal SNAT rhythm. Blinded animals showed a phase delay in the rise and fall of SNAT activity as compared to appropriate controls on the nights following treatment with carbachol. The experiments demonstrate the feasibility of a neuropharmacologic approach to the mechanisms underlying mammalian circadian rhythms. (Author abstract modified)

001403 Zatz, Martin; Brownstein, Michael J. Section on Pharmacology, Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Central depressants rapidly reduce nocturnal serotonin N-acetyltransferase activity in the rat pineal gland.** Brain Research (Amsterdam). 160(2):381-385, 1979.

Nocturnal serotonin N-acetyltransferase activity in the male Sprague-Dawley rat pineal gland was reduced by acute transection of efferent fibers from the suprachiasmatic nucleus and by certain central depressants. The sedative barbiturates, pentobarbital (40mg/kg) and thiopental (40mg/kg), rapidly reduced nocturnal serotonin N-acetyltransferase activity, but the anticonvulsant barbiturate phenobarbital (75mg/kg) was ineffective. Chloral hydrate and ethyl alcohol were ineffective at doses that produced rapid anesthesia. Morphine sulfate (20mg/kg), lidocaine (100mg/kg), and diazepam (10 and 20mg/kg) significantly reduced enzyme activity without producing anesthesia. Results suggest that the effect of the central depressants is to briefly uncouple the pineal from the central driving mechanism; the drugs may act in the hypothalamus distal to the suprachiasmatic nucleus, interfering with the transmission of the stimulus that causes increased adrenergic stimulation of the rat pineal gland. 21 references.

001404 Zatz, Martin; Brownstein, Michael J. Laboratory of Clinical Science, National Institute of Mental Health, Bethesda, MD 20014 **Intraventricular carbachol mimics the effects of light on the circadian rhythm in the rat pineal gland.** Science. 203(4378):358-361, 1979.

A pharmacological approach to the central oscillatory mechanism in the brain which regulates the pineal circadian cycles was attempted. Brief exposure of rats to light shifted the phase of the circadian rhythm of pineal serotonin N-acetyltransferase. Light also rapidly reduced nocturnal enzyme activity. Intraventicular injections of carbachol, a cholinergic agonist, mimicked both of these effects. Light and carbachol presumably act on the suprachiasmatic nucleus of the hypothalamus. The feasibility of using a neuropharmacologic approach to the mechanisms underlying mammalian circadian rhythms was demonstrated. 18 references. (Author abstract modified)

001405 Zieglgansberger, W.; Champagnat, J. Max-Planck-Institut fur Psychiatrie, Department of Neuropharmacology, 8 Munich 40, Germany **Cat spinal mononeurones exhibit topographic sensitivity to glatumate and glycine.** Brain Research (Amsterdam). 160(1):95-104, 1979.

Intracellular recording and microiontophoretic techniques were used to localize receptive sites for L-glutamate (GLU) and glycine (GLY) on spinal motoneurons of the cat. Microiontophoretic application of GLU to predominantly dendritic sites led to a depolarizing response with a significantly shorter delay than after application to somatic sites. Somatic applications of GLU caused a depolarization associated with a progressively increasing membrane conductance, whereas dendritic applications did not cause measurable increases in membrane conductance. Microiontophoretic application of GLY at dendritic or somatic sites produced hyperpolarizing responses with marked increases of membrane conductance; the onset latency was significantly

longer for dendritic applications than for somatic applications. Action potentials, excitatory postsynaptic potentials, and inhibitory postsynaptic potentials were attenuated by shunting during GLY or GLU-induced increases in membrane conductance. The specific distribution of excitatory glutaminergic and inhibitory glycinergic receptive sites on cat spinal motoneurones further supports a role for these amino acids as neurotransmitters. 22 references. (Author abstract modified)

001406 Zigmond, R. E. Department of Pharmacology, Harvard Medical School, Boston, MA 02115 **Tyrosine hydroxylase activity in noradrenergic neurons of the locus coeruleus after reserpine administration: sequential increase in cell bodies and nerve terminals.** Journal of Neurochemistry (Oxford). 32(1):23-29, 1979.

The effect of a single systemic injection of reserpine on tyrosine hydroxylase activity in the locus coeruleus, cerebellum, hypothalamus, and hippocampus of rats was examined. Increases in enzyme activity were seen in all four brain areas. However, the time course of the changes was different in each case. In the locus coeruleus the maximum change in enzyme activity was seen 3 days after drug administration; in the cerebellum 7 to 11 days; in the hypothalamus 7-11 days; and in the hippocampus 21 days. It is concluded that since tyrosine hydroxylase in the cerebellum and hippocampus is present in terminals of neurons whose cell bodies are located in the locus coeruleus, the delayed increase in enzyme activity in cerebellum and hippocampus probably depends upon the slow rate of transport of TH molecules in these neurons. 44 references. (Author abstract)

001407 Zimmerman, Dennis M.; Nickander, Rodney; Horng, Jong S.; Wong, David T. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **New structural concepts for narcotic antagonists defined in a 4-phenylpiperidine series.** Nature (London). 275(5678):332-334, 1978.

The structure activity relationships are reported of several novel phenylpiperidines which are potent narcotic antagonists without measurable agonist properties. The 1,3,4-trialkyl-4-phenylpiperidines were pure antagonists as judged by the lack of measurable narcotic agonist effects of the N-propiophenone (V) in an in vitro measurement sensitive to narcotic agonist effects and free of the influence of metabolism. The importance of a 3-methyl substituent in contributing the narcotic antagonist properties within the phenylpiperidine series as a whole is demonstrated experimentally. It is claimed that a new class of narcotic antagonists has been defined in which the 3 position of the piperidine ring rather than substitution at the nitrogen is the area critical for determining antagonist activity. 19 references.

001408 Zimmerman, Mark B.; Stricker, Edward M.; Blaine, Edward H. Merck Institute for Therapeutic Research, West Point, PA 19486 **Water and NaCl intake after furosemide treatment in sheep (Ovis aires).** Journal of Comparative and Physiological Psychology. 92(3):501-510, 1978.

The onset of sodium appetite and thirst following acute hypovolemia in sheep induced by infusion of furosemide was examined. Following the excretion of large quantities of hypotonic urine, the sheep consumed more water than was needed simply to restore osmotic equilibrium. Despite the natriuresis, in only 2 of 15 experiments did sheep drink significant amounts of NaCl solution during the first 10 hours after the onset of furosemide treatment. By 24 hours, the saline consumption in all but three experiments had increased and compensated adequately for the loss of sodium rich fluid in urine. It is concluded that following acute hypovolemia in sheep, the onset of sodium appetite is delayed relative to the appearance of thirst. 29 references. (Author abstract modified)

04 MECHANISM OF ACTION: BEHAVIORAL

001409 Alexander, George J.; Kopeloff, Lenore M. New York State Department of Mental Hygiene, Neurotoxicology Research Unit, Bronx, NY 10461 **Effect of 6-hydroxydopamine: delayed motor manifestations associated with high mortality in sound-induced seizures in mice.** Neurochemical Research. 3(6):821-825, 1978.

Intraperitoneal injection of 50mg/kg 6-hydroxydopamine (6-OHDA), a compound that causes degeneration of adrenergic neurons, did not alter the number of inbred audiosusceptible mice that responded with seizures upon exposure to auditory stimuli, but did affect the nature of the audiogenic seizures that were induced in susceptible mice. In 6-OHDA treated animals, seizures were characterized by a delayed onset and a prolonged clonic phase that ended in death. The tonic phase that invariably followed clonus in control animals was not seen in 6-OHDA treated mice. Results suggest that a lowering of peripheral norepinephrine activity may correlate with delayed neuromuscular response and with increased risk of cardiac arrest during seizures. 7 references.

001410 Alkondon, M.; Vedasiromoni, J. R.; Mukherjee, P. K.; Ganguly, D. K. Indian Institute of Experimental Medicine, 4, Raja S. C. Mullick Road, Calcutta-700 032, India **Influence of triethylcholine on autonomic transmission in vitro.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 231(1):63-69, 1978.

The influence of triethylcholine (TEC) on isolated autonomic transmission was investigated in some isolated preparations. The guinea pig hypogastric nerve vas deferens urinary bladder preparation for studying both cholinergic and adrenergic transmission simultaneously is described. Incubation with TEC caused impairment of cholinergic transmission but failed to inhibit adrenergic transmission. Employing TEC as a pharmacological tool, no evidence for a cholinergic link could be obtained in adrenergic transmission in the isolated vas deferens and rabbit ileum preparations. 12 references. (Author abstract)

001411 Alleva, Enrico; Castellano, Claudio; Oliverio, Alberto. Istituto di Fisiologia Generale, Universita di Roma, I-00100 Rome, Italy **Individual differences in barbiturate-induced sleeping time in the mouse.** Progress in Neuro-Psychopharmacology (Oxford). 2(4):451-453, 1978.

The effects of pentobarbital and its interactions with caffeine and promethazine on sleep onset and sleeping times in BALB/c, C57BL/6 and DBA/2 strains of male mice were investigated. Differences in barbiturate induced onset and sleeping times were evident in the three inbred strains of mice. Caffeine antagonized while promethazine enhanced the effects of pentobarbital. These effects are discussed in terms of arousal and neurochemical differences among strains of mice. 8 references. (Author abstract modified)

001412 Anden, N.-E.; Grabowska-Anden, M. Department of Pharmacology, University of Goteborg, Fack, S-400 33 Goteborg, Sweden **Morphine-induced changes in striatal dopamine mechanisms not evoked from the dopamine nerve terminals.** Journal of Pharmacy and Pharmacology (London). 30(11):732-734, 1978.

Morphine induced changes in striatal dopamine mechanisms were investigated in male Sprague-Dawley rats. Results indicate that morphine inhibits the striatal functional effects of apomorphine and haloperidol in rats by an action outside the corpus striatum. Morphine also stimulated the synthesis of dopamine and noradrenaline, probably by accelerating the firing of dopaminergic and noradrenergic neurons. 13 referernces.

001413 Ary, Marylouise. University of California, Los Angeles **Central dopaminergic mechanisms in morphine withdrawal in the rat. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7730885, HC$15. MF$7.50. 151 p. 1977.

The involvement of central dopaminergic mechanisms in the morphine withdrawal syndrome in the rat was investigated. Systematic administration of apomorphine suppressed several withdrawal signs, including wet dog shakes, teeth chattering, weight loss, writhing, and diarrhea, while pimozide increased some of these signs. Hypothermia was increased by apomorphine and antagonized by pimozide. Naxolone induced a withdrawal hypothermia when injected into the anterior hypothalmic/preoptic area of the dependent rat. Chronic morphine treatment appears to cause an increase in dopamine receptor sensitivity, suggesting that a change in the sensitivity of central neurotransmitter receptors is one of the mechanisms responsible for the development of tolerance and physical dependence on the narcotic. (Journal abstract modified)

001414 Bacotti, Alfred V. Worcester Foundation for Experimental Biology, 222 Maple Avenue, Shrewsbury, MA 01545 **Pentobarbital and d-amphetamine effects on concurrent performances.** Journal of the Experimental Analysis of Behavior. 31(1):141-158, 1979.

The effects of pentobarbital and d-amphetamine were studied in pigeons responding under several concurrent fixed ratio variable interval and concurrent fixed ratio interval schedules of food presentation. Doses of d-amphetamine that increased or did not affect responding under the interval schedules decreased responding under the fixed ratio schedule, whereas doses of pentobarbital that increased responding under the fixed ratio schedule decreased or eliminated responding under the interval schedules. Changes in the parameter of one schedule altered responding controlled by that schedule and also other concurrent performances. It is concluded that this manipulation altered the effects of drugs on each behavior. 19 references. (Author abstract modified)

001415 Baldessarini, Ross J. Dept. of Psychiatry, Harvard Medical School, Boston, MA **The pathophysiologic basis of tardive dyskinesia.** Psychopharmacology Bulletin. 14(4):79-81, 1978.

In a paper presented at the session on basic issues in tardive dyskinesia, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the pathophysiological basis of tardive dyskinesia is described and the postsynaptic receptor supersensitivity hypothesis is reviewed. It is contended that the dopamine receptor supersensitivity hypothesis may help to explain some features of the pathophysiology of tardive dyskinesia, especially its more rapidly reversible forms, such as acute withdrawal dyskinesias. Further, the entertainment of this hypothesis has shed light on only recently appreciated mechanisms that evidently exert important regulatory effects on central synaptic function. 4 references.

001416 Balster, Robert L.; Chait, Larry D. Pharmacology Department, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298 **The effects of phencyclidine on amphetamine stereotypy in rats.** European Journal of Pharmacology (Amsterdam). 48(4):445-450, 1978.

The effects of phencyclidine on d-amphetamine induced behavioral stereotypy were investigated in male Sprague-Dawley rats. A dose of phencyclidine (2.5mg/kg) that had no effect when given alone enhanced the behavioral effects of d-amphetamine (1 and 3mg/kg). Higher doses (5 and 10mg/kg) of phencyclidine produced some stereotypy when given alone but also produced ataxia, which confounded the rating of their other behavioral effects; these higher doses did not enhance the effects of d-amphetamine. Results suggest that phencyclidine may have dopaminergic activity similar to that of amphetamine. 24 references. (Author abstract)

001417 Bareggi, S. R.; Becker, R. E.; Ginsburg, B. E.; Genovese, E. Ginsberg: Department of Biobehavioral Sciences, University of Connecticut, Storrs, CT 06268 **Neurochemical investigation of an endogenous model of the ""hyperkinetic syndrome" in a hybrid dog.** Life Sciences (Oxford). 24(6):481-488, 1979.

In a neurochemical study of an animal model of the hyperkinetic syndrome, homovanillic acid (HVA), 5-hydroxyindoleacetic acid (5-HIAA), and 3-methoxy-4-hydroxyphenyl glycol sulfate were measured in cerebrospinal fluid (CSF) and noradrenaline (NA), dopamine (DA), HVA, 5-HIAA, and dihydroxyphenylacetic acid were assayed in brain tissues from beagles and telomian/beagle hybrid dogs. The hybrid animals resemble hyperkinetic children in their poor ability to respond with the appropriate behavior in an inhibitory training test; the performance of some hybrids (responders) improved with amphetamine, while that of nonresponder hybrids did not. Responder hybrids had lower levels of NA, DA, and HVA in brain and lower HVA in CSF than nonresponder hybrids or control beagles. These results indicate that the responder hybrids can be differentiated behaviorally and neurochemically from nonresponder hybrids and normal dogs; these animals may prove to be useful models for the study of the mechanism and therapy of the hyperkinetic syndrome. 25 references. (Author abstract modified)

001418 Beatty, William W.; Holzer, Gerald A. Dept. of Psychology, North Dakota State University, Fargo, ND 58105 **Sex differences in stereotyped behavior in the rat.** Pharmacology Biochemistry and Behavior. 9(6):777-783, 1978.

The possibility of sex differences in the magnitude of stereotypy elicited by amphetamine and apomorphine in rats was examined. It was found that neurologically intact female rats exhibited more intense and more prolonged stereotyped behavior in response to d-amphetamine than males. Prior treatment with intrastriatal injections of 6-hydroxydopamine (6HDA) eliminated the sex difference in response to larger, but not to smaller doses of amphetamine. Neither intact nor 6HDA treated rats differed in the amount of stereotyped behavior elicited by the dopamine agonist apomorphine suggesting that the sex difference in amphetamine elicited stereotypy is not the result of differences in striatal receptor mechanisms. 26 references. (Author abstract modified)

001419 Binks, S. M.; Murchie, J. K.; Greenwood, D. T. Research Biology Department, ICI Pharmaceuticals Ltd., Alderley Park, Macclesfield, Cheshire, SK10 4TG, England **A reward-reduction model of depression using self stimulating rats: an appraisal.** Pharmacology Biochemistry and Behavior. 10(3):441-443, 1979.

A potential model of depression using a reward reduction technique with intracranial self-stimulation was tested in male rats with electrodes chronically implanted in the medial forebrain bundle. According to this model, antidepressants should increase responding on progressively increasing fixed ratio (IRF) schedules. However, the tricyclic antidepressants imipramine and protriptyline failed to enhance responses on the IRF schedules, whereas d-amphetamine did produce the predicted antidepressant response enhancement. These results indicate that this paradigm is not a suitable screening test for antidepressant drugs. 8 references. (Author abstract modified)

001420 Blair, R.; Cytryniak, H.; Shizgal, P.; Amit, Z. Center for Research on Drug Dependence, Dept. of Psychology, Con-

cordia University, Sir George Williams Campus, Montreal, Quebec, Canada **Naloxone's antagonism of rigidity but not explosive motor behavior: possible evidence for two types of mechanisms underlying the actions of opiates and opioids.** Behavioral Biology. 24(1):24-31, 1978.

To examine types of mechanisms underlying actions of opiates and opioids, 82 rats were administered an intraperitoneal injection of naloxone prior to an intraventricular infusion of etonitazene or morphine. The rigidity produced by etonitazene was antagonized by naloxone (10mg/kg). In contrast to the results of a previous study, all doses of naloxone up to 160mg/kg failed to attenuate the explosive motor behavior resulting from an intraventricular infusion of morphine. Results indicate that all actions of opiates and opioids are not mediated by the naloxone blocked opiate receptor. 12 references. (Author abstract modified)

001421 Blaustein, Jeffrey David. University of Massachusetts **Progesterone: inhibition of female rat sexual behavior and investigations of its mechanism of action. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7730599, HC$15. MF7.50. 128 p. 1977.

The behavioral and physiological effects of progesterone in the inhibition of female rat sexual behavior were studied. In a typical procedure for inducing sexual behavior, estradiol benzoate (EB) and progesterone were given sequentially, separated by 42 hours. Chronic injections of progesterone and low doses of EB resulted in less sexual behavior than low doses of progesterone and low doses of EB. The results of an experiment which dissociated behaviorally the antiestrogenic action of progesterone from that of a synthetic antiestrogen, CI-628, are consistent with the notion that progesterone and synthetic estrogen antagonists inhibit the behavioral effects of estradiol by separate mechanisms. A synthetic progestin was 50 to 100 times as effective as progesterone in facilitating, sequentially inhibiting, and concurrently inhibiting female sexual behavior in ovariectomized rats. These studies support the hypothesis that binding of progestins by brain cell nuclei may be a prerequisite for at least some behavioral responses to progestins. (Journal abstract modified)

001422 Blozovski, Denise. Laboratoire de Psychophysiologie, Universite Pierre et Marie Curie, Paris, France **PA-learning in young rats with dorsal hippocampal- and hippocampo-entorhinal atropine.** Pharmacology Biochemistry and Behavior. 10(3):369-372, 1979.

When 21-day-old London Black (Rattus novegicus) rats were injected with atropine in the dorsal hippocampus and trained on a white/black step through passive avoidance task, the treated rats did not perform differentially from controls in acquisition or extinction. However, when atropine was administered into the ventral hippocampoentorhinal area, the animals showed a passive avoidance deficit. These results indicate that the posteroventral but not the anterodorsal part of the hippocampal complex is implicated in passive avoidance learning and suggest cholinergic mediation of this effect. 37 references. (Author abstract modified)

001423 Bodnar, Richard J.; Kelly, Dennis D.; Brutus, Martin; Glusman, Murray. Dept. of Behavioral Physiology, New York State Psychiatric Institute, Columbia University, 722 West 168th St., New York, NY 10032 **Chronic 2-deoxy-D-glucose treatment: adaptation of its analgesic, but not hyperphagic properties.** Pharmacology Biochemistry and Behavior. 9(6):763-768, 1978.

Adaptation to the elevations in food intake and pain thresholds produced by chronic 2-deoxy-D-glucose (2-DG) administration (an antimetabolic glucose analogue), were investigated. Seven rats were trained on an operant psychophysical liminal escape procedure and 12 rats were tested for alterations in reflex flinch jump thresholds. Adaptation occurred to the analgesic effects of 2-DG, but not to its hyperphagic properties. Data suggest that the analgesic and hyperphagic properties of 2-DG are experimentally dissociable, and that 2-DG may increase pain thresholds via a stress induced activation of pain inhibitory mechanisms. 34 references. (Author abstract modified)

001424 Borison, Richard L.; Havdala, Henri S.; Diamond, Bruce I. Anesthesiology Department, Mt. Sinai Hospital, Chicago, IL 60608 **A new animal model for schizophrenia: cholinergic and serotonergic modulation.** Communications in Psychopharmacology. 2(3):209-214, 1978.

Evidence is presented that, in rats, chronic d-amphetamine induced, but not phenylethylamine induced, stereotyped behavior is enhanced by the anticholinergic agent trihexyphenidyl and antagonized by the cholinesterase inhibitor, physostigmine. The serotonin amino acid precursor, D,L-5-hydroxytryptophane, failed to alter either d-amphetamine or phenylethylamine stereotypy, whereas the serotonin receptor blocker methysergide selectively antagonized phenylethylamine evoked stereotyped behavior. These interactions are consistent with previous suggestions that phenylethylamine induced stereotypy represents a valid animal model for schizophrenia. 11 references. (Author abstract modified)

001425 Britton, Donald Ray. Ohio State University **Acute and chronic lithium administration to the rat: relationship to drug distribution and behavioral effects. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7731835, HC$15. MF$7.50. 100 p. 1977.

The behavioral and physiological effects of the administration of lithium chloride to rats were studied. Lithium chloride produced a suppression of locomotor activity in rats which was dependend upon the duration of treatment and the nature of the testing environment. The suppressive effect was not apparent 24 hours following a single dose, but was seen following 6 such daily injections. Recovery from the locomotor effects was seen following 21 days of treatment. Examination of the regional brain distribution of lithium shows the hypothalamus and cortex to contain higher levels than other areas at the time of the observed locomotor suppression. (Journal abstract modified)

001426 Browne, Ronald G.; Derrington, David C.; Segal, David S. Pharmacology Department, Pfizer, Inc., Groton, CT 06340 **Comparison of opiate- and opioid-peptide-induced immobility.** Life Sciences (Oxford). 24(10):933-941, 1979.

The immobility syndrome (absence of spontaneous movement, loss of righting response, and generalized muscular rigidity) induced by intraventricular administration of the opioid peptides beta-endorphin and D-Met2-Pro5-enkephalinamide was compared with the behavioral profile induced by subcutaneous or intraventricular administration of morphine, methadone, and etonitazene. The patterns of behavioral effects induced by the opioid peptides and the synthetic opiates were quite similar. The immobility syndrome could also be produced by injection of beta-endorphin into the ventromedial periaqueductal gray, but not into the caudate, globus pallidus, amygdala, or dorsolateral periaqueductal gray. These results indicate that the similarity in behavioral effects produced by endogenous opioid peptides and synthetic opiates extends beyond their analgesic properties, suggesting a common mechanism of action. 36 references. (Author abstract modified)

001427 Burnham, W. M.; Albright, P.; Racine, R. J. Department of Pharmacology, Room 4309, Medical Sciences Building, University of Toronto, Toronto, Ontario, Canada M5S 1A8 M5S 1A8 **The effect of taurine on kindled seizures in the rat.** Ca-

nadian Journal of Physiology and Pharmacology (Ottawa). 56(3):497-500, 1978.

The effects of taurine on kindled seizures were investigated in male Royal Victoria black hooded rats. The drug's anticonvulsant actions were assessed when kindling stimulation was dropped to near threshold levels, when cortical as well as limbic kindled foci were stimulated, when developing as well as fully kindled seizures were involved, and when taurine was introduced directly into the ventricles of the brain. Even though these tests were specifically designed to favor the appearance of anticonvulsant effects, no taurine antagonism of kindled seizures was observed. 14 references. (Author abstract modified)

001428 Cairncross, K. D.; Wren, A.; Forster, C.; Cox, B.; Schnieden, H. School of Biological Sciences, Macquarie University, North Ryde, N.S.W. 2113, Australia **The effect of psychoactive drugs on plasma corticosterone levels and behaviour in the bulbectomized rat.** Pharmacology Biochemistry and Behavior. 10(3):355-359, 1979.

The effect of psychoactive drugs on plasma corticosterone levels and behavior was investigated in male Sprague-Dawley rats given bilateral olfactory bulbectomies (OB). Treatment of the OB rats with amitriptyline (5 and 10mg/kg), mianserin (5 and 10mg/kg), and viloxazine (2 and 5mg/kg) for at least 7 days corrected the acquisition deficit normally seen in OB rats and reduced the hyperreactivity and elevated corticosterone levels induced by OB. Amphetamine (1 and 3mg/kg for 7 days) increased the 11-hydroxycorticosterone (11-OHCS) concentrations, impaired acquisition, and increased the reactivity of OB and sham operated rats. Chlorpromazine (1 and 3mg/kg for 7 days) reduced plasma 11-OHCS levels and the hyperreactivity of both OB and sham oparated animals, but did not reduce the acquisition deficit exhibited by the OB rats. Chlordiazepoxide (5 and 15 mg/kg for 7 days) had a profile similar to that of chlorpromazine, except that it impaired acquisition in the sham operated rats. These results indicate that the OB rat is a useful model for distinguishing antidepressants from other major classes of psychotropic drugs. 17 references. (Author abstract modified)

001429 Carmody, John J.; Carroll, Peter R.; Morgans, David. School of Physiology and Pharmacology, University of New South Wales, Kensington, NSW 2033, Australia **Naloxone increases pain perception in rats and mice.** Life Sciences (Oxford). 24(13):1149-1152, 1979.

In a dose as low as 50mcg/kg intraperitoneally administered, naloxone increased pain perception within 30 minutes of administration in female Wistar rats and QS mice of both sexes. This dose of naloxone also antagonized the analgesia induced by 15mg/kg ip morphine in both species. Mice were more sensitive and showed a greater response to naloxone than rats. Results are consistent with the hypothesis that pain sensitivity is modulated by the physiological release of an endogenous opioid. 11 references. (Author abstract modified)

001430 Cashin, Colin H.; Fairhurst, John; Horwell, David C.; Pullar, Ian A.; Sutton, Susan; Timms, Graham H.; Wildsmith, Eric; Wright, Francesca. Lilly Research Centre Limited, Erl Wood Manor, Windlesham, Surrey, England **Potential anti-depressant and C.N.S. stimulant activity in a series of cis and trans fused 3-aminomethyl-2-phenylbicyclo(2,2,2)octane and analogous oct-2-ene derivatives.** European Journal of Medicinal Chemistry (Paris). 13(6):495-501, 1978.

The potential antidepressant properties of a series of trans and cis fused 3-aminomethyl-2-phenylbicyclo(2,2,2)octanes and their analogous oct-2-ene derivatives, as measured by a consideration of both the reversal of reserpine hypothermia in rats and the inhibition of uptake of 14C-noradrenaline and 14C-5-hydroxytryptamine, in mouse brain synaptosomes were studied. These data were compared with the known antidepressants imipramine and nomifense. The cis series was considered to be the most potent overall. On oral administration to mice, an increase in locomotor activity of long duration was seen with the more potent members of both the cis and oct-2-ene series, whereas none was observed in the trans series. The most potent compound in this regard was cis derivative which has been resolved into its two isomers. The activity profile was common to both optical isomers with the levorotatory isomer being the more potent. A table of the trans and cis octanes and their analogous oct-2-ene derivatives is provided. 18 references. (Author abstract modified)

001431 Chan, Samuel H. H. Department of Life Sciences, Indiana State University, Terre Haute, IN 47809 **Participation of the nucleus reticularis gigantocellularis in the morphine suppression of jaw-opening reflex in cats.** Brain Research (Amsterdam). 160(2):377-380, 1979.

The possible involvement of the nucleus reticularis gigantocellularis (NRGC) in morphine analgesia in the brainstem was investigated in cats, using the jaw-opening reflex (JOR) as the pain index. Microinjection of small amounts of morphine directly into the NRGC cause a significant dose dependent depression of the JOR. Naloxone reversed the morphine effect, indicating that morphine was probably acting on opiate receptors in the NRGC. It is suggested that morphine may activate the NRGC, which would physiologically inhibit the transmission of nociceptive information from the dental pulp in the CNS. 15 references.

001432 Christensen, Anne Vibeke; Arnt, Jorn; Scheel-Kruger, Jorgen. Department of Pharmacology and Toxicology, H. Lundbeck & Co. A/S, Ottiliavej 7-9, 2500 Valby, Denmark **Muscimol antagonizes morphine hypermotility without potentiation of analgesia.** European Journal of Pharmacology (Amsterdam). 48(4):459-462, 1978.

The effects of muscimol, a potent and specific gamma-aminobutyric acid (GABA) agonist, on morphine induced motility and analgesia were investigated in male NMRI/BOM mice. Muscimol (0.63 and 1.0mg/kg) strongly depressed characteristic morphine induced locomotor activity. Muscimol induced only a slight increase in morphine analgesia, as measured by the hot plate test. No effect of muscimol on morphine analgesia was observed in the wire grid test. Results indicate that GABA differentially influences morphine stimulation and analgesia. 10 references. (Author abstract)

001433 Chung Hwang, Eunyong; Van Woert, Melvin H. Dept. of Neurology, Mount Sinai School of Medicine, Fifth Avenue & 100th Street, New York, NY 10029 **Behavioral and biochemical actions of p-chlorophenylethylamine (P-CPEA) in mice.** Life Sciences (Oxford). 24(7):595-601, 1979.

To determine why p-chlorophenylalanine (p-CPA) acts as a serotonin (5-HT) agonist before it depletes brain 5-HT, the effects of p-CPA and its metabolites, p-chlorophenylethylamine (p-CPEA) and p-chlorophenylacetic acid, were investigated in male Swis-Webster mice. Of the three compounds, only p-CPEA induced the ""serotonin syndrome" (lateral head weaving, Straub tail, hindlimb abduction, tremor, hyperactivity, reciprocal forepaw treading, salivation, and piloerection) in mice after ip administration. These behavioral signs were partially prevented by pretreatment with 5-HT uptake blockers and receptor blockers, but not by two depletors of brain 5-HT (p-CPA and reserpine). At a dose of 50mg/kg, p-CPEA produced an initial decrease in 5-HT associated with an increase in 5-hydroxyindoleacetic acid, with a miximum change 30 minutes after in-

jection; these early biochemical changes were prevented by pretreatment with fluoxetine (10mg/kg). Binding studies indicated that p-CPEA competes with tritiated 5-HT for 5-HT receptors in brain. It is suggested that the reported paradoxical effects of p-CPA in several behavioral paradigms may be due to the decarboxylation of p-CPA to p-CPEA, which may stimulate 5-HT receptors and enhance 5-HT release. 22 references. (Author abstract modified)

001434 Colpaert, Francis C.; Niemegeers, Carlos J. E.; Janssen, Paul A. J. Department of Pharmacology, Janssen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **Drug-cue conditioning to external stimulus conditions.** European Journal of Pharmacology (Amsterdam). 49(2):185-188, 1978.

Male Wistar rats were trained to discriminate 0.04mg/kg fentanyl from saline in a two lever procedure and to discriminate 10mg/kg pentobarbital from saline in a maze procedure. Stimulus generalization experiments in rats trained in this double discrimination indicate that the internal cues produced by these training drugs can be conditioned to the external stimulus conditions associated with the different discrimination procedures. Thus, in the two lever procedure, only the training drug fentanyl and another narcotic analgesic, morphine, yielded the drug appropriate response, whereas saline, pentobarbital, and chlordiazepoxide induced responding appropriate to saline. Similarly, in the maze procedure, only the training drug pentobarbital and the pharmacologically related chlordiazepoxide yielded the drug response, while responding appropriate to the saline condition was obtained following saline, fentanyl, or morphine. 6 references. (Author abstract modified)

001435 Colpaert, Francis C. Department of Pharmacology, Janssen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **Can chronic pain be suppressed despite purported tolerance to narcotic analgesia?** Life Sciences (Oxford). 24(13):1201-1209, 1979.

The response to acute nociceptive stimulation and the analgesic response to narcotic drugs were examined in male Wistar rats exposed to an experimental model of chronic pain (adjuvant arthritis induced by Mycobacterium butyricum). Results indicate that exposure to chronic pain alone causes hypoalgesia, which can be attenuated by concurrent narcotic administration. Chronic narcotic administration alone causes hyperalgesia, which can be attenuated by concurrent exposure to chronic pain. The tolerance to narcotic analgesia induced by chronic narcotic administration in pain free animals does not necessarily occur in animals concurrently exposed to chronic pain. Results are discussed in relation to a recently proposed hypothesis of pain processing in the CNS, and implications for treatment of chronic pain are considered. 27 references. (Author abstract modified)

001436 Cooper, S. J.; Francis, R. L. Department of Psychology, Queen's University of Belfast, Belfast BT7 1NN, Northern Ireland **Feeding parameters in the rat: interactions of chlordiazepoxide with ()-amphetamine or fenfluramine.** British Journal of Pharmacology (London). 64(3):378P-379P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of chlordiazepoxide, d-amphetamine, and fenfluramine on feeding behavior in male Sprague-Dawley rats are reported. Chlordiazepoxide (5.0or 10.0mg/kg) alone did not affect food intake, but amphetamine (0.5or 1.0mg/kg) and fenfluramine (2.0or 4.0mg/kg) significantly reduced food intake. Chlordiazepoxide effectively blocked the anorexic effect of amphetamine but not that of fenfluramine. A significant drug interaction between chlordiazepoxide and fenfluramine, but not chlordiazepoxide and amphetamine, was seen in feeding duration measures. Chlordiazepoxide strongly antagonized the effect of amphetamine on latency to eat, but did not counteract the lengthened latencies to eat observed in fenfluramine treated animals. Results indicate that d-amphetamine and fenfluramine differ in the detailed mechanisms of action that mediate their anorexic effects and indicate important differences in the interactions of these anorectic drugs with chlordiazepoxide. 6 references. (Author abstract modified)

001437 Costain, D. W.; Green, A. R. MRC Unit, University Department of Clinical Pharmacology, Radcliffe Infirmary, Oxford OX2 6HE, England **Beta-adrenoceptor antagonists inhibit the behavioural responses of rats to increased brain 5-hydroxytryptamine.** British Journal of Pharmacology (London). 64(2):193-200, 1978.

The effect of beta-adrenoceptor blocking agents on the 5-hydroxytryptamine (5-HT) induced hyperactivity response produced in male Sprague-Dawley rats by intraperitoneal injection of tranylcypromine (10mg) followed by L-tryptophan (50mg/kg) was investigated. In doses of 40mg/kg, racemic alprenolol, timolol, sotalol, and pindolol inhibited the hyperactivity response to some degree when given 45 minutes before tranylcypromine, as did racemic oxprenolol when given after L-tryptophan. Beta-adrenoceptor antagonists that are not found in the brain in appreciable amounts after peripheral injection (racemic atenolol, practolol, labetalol, and acebutalol) did not inhibit the 5-HT mediated behavior. The betal selective drug ()-metoprolol and the beta2 selective drug ()-botoxamine both failed to inhibit the behavioral response. The drugs that blocked the 5-HT mediated behavior did not alter brain 5-HT concentrations, synthesis rate, or the accumulation of 5-HT following tranylcypromine and L-tryptophan. However, they did inhibit the hyperactivity produced by 5-methoxy-N,N-dimethyltryptamine, indicating that the beta-adrenoceptor blocking drugs were inhibiting the postsynaptic 5-HT mediated response. Circling produced by 3mg/kg methamphetamine in unilateral nigrostriatal lesioned rats was not altered by alprenolol, sotalol, pindolol, or metaprolol. It is concluded that nonselective adrenoceptor antagonists that have a high brain/blood ratio after peripheral injection block 5-HT mediated behavioral responses in the rat. 32 references. (Author abstract modified)

001438 Costall, B.; Hui, S.-C. G; Naylor, R. J. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford, England **Modulation of amphetamine hyperactivity by DPI injected into rat nucleus accumbens.** British Journal of Pharmacology (London). 64(3):461P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the modulation of amphetamine hyperactivity by (3,4-dihydroxy-phenylamino)-2-imidazoline (DPI) injected into the nucleus accumbens in male Sprague-Dawley rats is reported. Intraperitoneal injection of 1.5mg/kg d-amphetamine induced hyperactivity, which was anatagonized by intraaccumbens injections of 1.0-4.Omcg fluphenazine and 5-20mcg DPI. The antagonistic action of 10mcg DPI could be reduced or abolished by 30 minute pretreatments with 2.0-5.0mg/kg intraperitoneal cyproheptadine or 0.25-1.25mg/kg intraperitoneal methysergide. Similar pretreatments with 1.25-10mg/kg propranolol, 20mg/kg piperoxan, and 1.0-10mg/kg atropine failed to modify the effects of DPI or the amphetamine hyperactivity itself. It is concluded that amphetamine hyperactivity is subject to modulation by DPI, indicating the involvement of a serotonergic component in addition to the action of dopamine on neuroleptic sensitive mechanisms. 4 references. (Author abstract modified)

001439 Costall, Brenda; Naylor, Robert J. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford,

W. Yorks BD7 1DP, England **Dopamine antagonistic effects of a series of analogues of oxiperomide and spiroxatrine measured behaviorally in the rodent.** Journal of Pharmacy and Pharmacology (London). 30(11):693-698, 1978.

The activity spectra of oxiperomide, spiroxatrine, and their analogues were determined in two experimental models of abnormal perioral movements and in a stereotypy test in male Dunkin-Hartley guinea-pigs and in catalepsy/catatonia tests in male Sprague-Dawley rats. The parent compounds oxiperomide and spiroxatrine possessed optimal activity in all tests, but responses to the series of compounds allowed clear differentiation between an ability to antagonize perioral movements (induced by intrastriatal dopamine or subcutaneous 2-(N,N-dipropyl)amino-5,6-dihydroxy-1,2,3,4-tetrahydronaphthalene) and an ability to antagonize apomorphine induced stereotypy. All compounds that antagonized the abnormal perioral movements also produced catalepsy/catatonia. Results are discussed in terms of the selection of suitable agents for the treatment of perioral dyskinesia. 10 references. (Author abstract modified)

001440 Costall, Brenda; Naylor, Robert J.; Owen, Richard T. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford BD7 1DP, England **Gabaminergic and serotonergic modulation of the antidyskinetic effects of tiapride and oxiperomide in the model using 2-(N,N-dipropyl)amino-5,6-dihydroxytetralin.** European Journal of Pharmacology (Amsterdam). 49(4):407-413, 1978.

The activities of oxiperomide and tiapride were compared with those of control neuroleptic agents in the dyskinesia model using 2-(N,N-dipropyl)amino-5,6-dihydroxytetralin to induce perioral movements. The perioral movements induced by the 2-aminotetralin compound (0.05mg/kg, subcutaneously) were antagonized by intrastriatal gamma-aminobutyric acid (GABA, 2.5-10microg bilaterally) and serotonin (25-100microg bilaterally). Intraperitoneal sodium valproate had little effect, but 1.25mg/kg subcutaneous quipazine abolished the perioral dyskinesias. Subthreshold doses of intraperitoneal oxiperomide and tiapride synergized with subthreshold intrastriatal doses of both GABA and serotonin and with subcutaneous quipazine to antagonize the perioral movements induced by the 2-aminotetralin compound. Subthreshold doses of haloperidol, sultopride, metochlopramide, and pimozide failed to consistently antagonize these movements when similarly combined with GABA, serotonin, or quipazine. It is suggested that, in addition to their known action on cerebral dopamine mechanisms, oxiperomide and tiapride may modify abnormal perioral movements by modulating striatal mechanisms mediated by GABA and serotonin. 9 references. (Author abstract)

001441 Cross, A. J.; Waddington, J. L. Division of Psychiatry, MRC Clinical Research Centre, Watford Road, Harrow HA1 3UJ, England **Drug effects in GABA-dependent rotational behaviour model and on (3H)-GABA receptor binding: studies with the enantiomers of baclofen HCl.** British Journal of Pharmacology (London). 64(3):380P-381P. 1978.

In a paper presented at the September 1978 meeting of British Pharmacological Society at the University of Nottingham, the effects of muscimol and of enantiomers of baclofen hydrochloride on gamma-aminobutyric acid (GABA) dependent rotational behavior in male Sprague-Dawley rats and on (3H) GABA Receptor binding in crude synaptic membrane preparations are reported. The (), (-), and (plus or minus) enantiomers were equally active, both in inducing contralateral rotational responses and in displacing (3H)GABA binding; these properties are thus distinct from the stereospecific GABA independent neuronal depressant effects of baclofen. However, the baclofen enantiomers were only weakly active in these measures when compared to the specific GABA agonist, muscimol. 8 references. (Author abstract modified)

001442 Crossman, A. R.; Lee, L. A.; Slater, P. Department of Anatomy, University of Manchester, Manchester M13 9PT, England **Effects of intrapallidal administration of convulsant drugs on head-turning evoked by striatal stimulation in rats.** British Journal of Pharmacology (London). 64(3):381P-382P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of intrapallidal administraion of convulsant drugs on head turning evoked by striatal stimulation in female Sprague-Dawley rats are reported. When picrotoxin was injected into the globus pallidus (GP), every animal showed an immediate dose related decrease in the latency of the head turn response to striatal stimulation. The head turn response was also slowed by injection of gamma-aminobutyric acid (GABA), the GABA agonist muscimol, and the GABA uptake inhibitor (-)-2,4-diaminobutyric acid. Of the convulsants tested, only ()-tubocurarine mimicked picrotoxin in facilitating the head turn; bicuculline and penicillin G slowed the head turn response, and leptazol had no effect on head turning. It is suggested that striatal stimulation combined with drug injection into the GP provides a model for studying GABA transmission in vivo. 6 references. (Author abstract modified)

001443 Cunningham, Christopher L. Dept. of Medical Psychology, University of Oregon Heath Sciences Center, Portland, OR 97201 **Alcohol interacts with flavor during extinction of conditioned taste aversion.** Physiological Psychology. 6(4):510-516, 1978.

Three experiments were conducted in rats to further examine alcohol's apparent ability to retard extinction of taste aversion conditioned by lithium chloride toxicosis. Intraperitoneal injections of ethanol (1.2g/kg) given 30 min before taste aversion extinction trials retarded extinction of aversion to a quinine hydrochloride solution, did not affect extinction of aversions to sucrose or hydrochloric acid solutions, and facilitated extinction of aversion to a sodium chloride solution. Results do not support the general belief that ethanol retards extinction, but seem more consistent with the suggestion that i.p. injection of ethanol produces a taste which interacts with the tastes of orally ingested substances. Some implications of this possibility for the study of pharmacological agents on conditioned taste aversion are discussed. 20 references. (Author abstract modified)

001444 Dailey, John W. Department of Pharmacology, Louisiana State University School of Medicine in Shreveport, Shreveport, LA 71130 **Effects of maternally administered reserpine on the development of the cold stress response and its possible relation to adrenergic nervous system function.** Research Communications in Chemical Pathology and Pharmacology. 19(3):389-402, 1978.

The effects of maternally administered resperine on thermoregulatory ability and adrenergic nervous system development of the rat were investigated. Maternal administration of resperine from day 8 of pregnancy until weaning of the pups produced no change in litter size, birthweight, or weaning weight. At 70 to 80 days of age the offspring of resperine treated dams were less able to maintain body temperature in response to cold stress with physical restraint. Similarly treated offspring exhibited a smaller rise in urinary free norepinephrine levels during the initial stages of cold exposure and also incorporated less 14C from tyrosine into heart norepinephrine during acute cold exposure. Data support the hypothesis that maternal administration of resperine produces a permanent alteration in the ability of the offspring to respond to cold stress. 17 references. (Author abstract modified)

001445 de Lanerolle, N. C.; Youngren, O. M. Department of Animal Science, University of Minnesota, St. Paul, MN 55108 **Chick vocalization and emotional behavior influenced by apomorphine.** Journal of Comparative and Physiological Psychology. 92(3):416-430, 1978.

The role of dopamine in the causation of vocalization and other behavior in domestic chicks was examined by injecting 5-day-old chicks with 1mg/kg doses of apomorphine hydrochloride and recording their behavior. Apomorphine induced trills, facilitated twitters, and inhibited warbles. Pecking at objects in the cage and locomotion were increased, whereas the duration of eye closure was reduced. It is concluded that trills, twitters, and pecking are produced by activation of dopaminergic mechanisms. It is hypothesized that some of the behavior induced by apomorphine, especially vocalization and pecking, are a consequence of altered states of attention induced by the drug. 26 references. (Author abstract modified)

001446 de Wied, David; Bohus, Bela; van Ree, Jan M.; Kovacs, Gabor L.; Greven, Henk M. Rudolf Magnus Institute for Pharmacology, Medical Faculty, University of Utrecht, Utrecht, The Netherlands **Neuroleptic-like activity of (des-Tyr1)-gamma-endorphin in rats.** Lancet (London). 1(8072):1046, 1978.

A series of studies undertaken to examine the effects of various beta-endorphin fragments on the active and passive avoidance behaviors of rats are reported in a letter to the editor. Gamma-endorphin facilitated extinction of pole jumping avoidance behavior and attenuated passive avoidance. The opiate like activity of metenkephalin is reduced by removal of tyrosine, the N-terminal amino acid residue. While (des-Tyr1)-gamma-endorphin (DT-gamma-E) completely lost its opiate like activity in a guinea pig ileum preparation, it was more potent than gamma-endorphin in both active and passive avoidance tests. DT-gamma-E was also active in rat paw grip tests, a property characteristic of neuroleptic drugs not seen in morphine treated animals. DT-gamma-E had no effect on corneal reflex, righting reflex, or on rigidity, but treated rats were slightly less mobile. Alpha and gamma-endorphin had opposite effects on the extinction of active and the retention of passive avoidance behavior. The similarity of the effects of DT-gamma-E to neuroleptic drugs suggests that DT-gamma-E or a closely related neuropeptide is an endogenous neuroleptic with a profile more specific than that of haloperidol. 8 references.

001447 De Wied, David; Kovacs, Gabor L.; Bohus, Bela; Van Ree, Jan M.; Greven, Henk M. Rudolf Magnus Institute for Pharmacology, Medical Faculty, University of Utrecht, Vondellaan 6, Utrecht, The Netherlands **Neuroleptic activity of the neuropeptide beta-LPH62-77 ((Des-Tyr1)gamma-endorphin; DTgammaE).** European Journal of Pharmacology (Amsterdam). 49(4):427-436, 1978.

In contrast to beta-endorphin, alpha-endorphin, betaLPH61-69, and Met-enkephalin, which delay extinction of pole jumping avoidance behavior, gamma-endorphin given either subcutaneously (30ng) or intraventricularly (0.3ng) facilitated extinction. Removal of the N-terminal amino acid residue tyrosine, yielding the neuropeptide (Des-Tyr1)gamma-endorphin (DTgammaE), potentiated the facilitating effect of gamma-endorphin on pole jumping avoidance behavior. DTgammaE also attenuated passive avoidance behavior, whereas alpha-endorphin facilitated this behavior. Additional studies of gross behavior indicate that DTgammaE or a closely related peptide is an endogenous neuroleptic. It is suggested that reduced availability of DTgammaE as a result of an inborn error in synthesis is an etiological factor in the psychopathological states for which neuroleptic drugs are beneficial. 21 references. (Author abstract modified)

001448 Deakin, J. F. W.; Green, A. R. National Institute for Medical Research, Mill Hill, London NW7, England **The effects of putative 5-hydroxytryptamine antagonists on the behaviour produced by administration of tranylcypromine and L-tryptophan or tranylcypromine and L-DOPA to rats.** British Journal of Pharmacology (London). 64(2):201-209, 1978.

The putative 5-hydroxytryptamine (5-HT) receptor blocking drugs methysergide (10mg/kg) and methergoline (5mg/kg) abolished some components of the hyperactivity syndrome induced in male Sprague-Dawley rats by tranylcypromine (20mg/kg) and L-tryptophan (100mg/kg). Hyperactivity and hyperreactivity were potentiated, with a resultant increase in automated locomotor activity counts. In contrast, (-)-propranolol (20mg/kg) inhibited all features of the syndrome. The same results were obtained with these drugs when the behavioral syndrome was elicited by p-chloroamphetamine (10mg/kg) or by tranylcypromine and tryptamine (10mg/kg). Methysergide and methergoline had similar effects on the syndrome produced by tranylcypromine and L-DOPA (50mg/kg), but propranolol had no effect. None of the 5-HT receptor antagonists affected brain 5-HT turnover. Microinjections of 5,7-dihydroxytryptamine into the spinal cord resulted in a 70% fall in cord 5-HT concentrations and no change in brain 5-HT concentrations; the behavioral response to 5-methoxy-N,N-dimethyltryptamine (2mg/kg) was potentiated in these animals, suggesting that 5-HT receptors become supersensitive on denervation and that some components of the behavioral syndrome are mediated by spinal cord 5-HT receptors. Pretreatment with alpha-methyl-p-tyrosine delayed the onset of all components of the behavior elicited by tranylcypromine, indicating an involvement of catecholamines in the syndrome. 26 references. (Author abstract modified)

001449 Delini-Stula, A.; Vassout, A. Ciba-Geigy Ltd., Research Department, Pharmaceuticals Division, Basel, Switzerland **Modulatory effects of baclofen, muscimol and GABA on interspecific aggressive behaviour in the rat.** Neuropharmacology (Oxford). 17(12):1063-1065, 1978.

In a paper presented at the July 1978 meeting of the British Association for Psychopharmacology, held at the University of Wales Institute of Science and Technology in Cardiff, the effects of baclofen, muscimol, gamma-aminobutyric acid (GABA), and GABA-cetylester on muricidal behavior in male Tif:RAIF rats are reported. Muscimol and GABA-cetylester markedly inhibited muricidal behavior in spontaneous killer rats, but were inactive or considerably less effective in rats made muricidal by olfactory bulbectomy. Even at high doses, muscimol and GABA failed to affect the muricide response after direct intraamygdaloid injections in bulbectomized rats. In contrast, l-baclofen inhibited the muricide response in spontaneous killers and in bulbectomized rats to a similar degree. Baclofen also had a strong inhibitory effect on the muricide response when injected into the amygdala at low doses. Results indicate that the GABA agonists inhibit interspecies aggression in rats via an action in the olfactory bulbs, whereas baclofen appears to have a different site of action. 8 references.

001450 Denoble, Victor J.; Begleiter, Henri. Psychiatry Research Unit, Mayo Box 392, University of Minnesota, Minneapolis, MN 55455 **Impairment of acquisition of a DRL schedule following prolonged ethanol consumption.** Pharmacology Biochemistry and Behavior. 10(3):393-396, 1979.

The acquisition of differential reinforcement of low rate (DRL) schedules was investigated in male hooded rats with a history of chronic ethanol consumption. The rats were given ethanol or sucrose solutions as their only source of fluid for 6 months; 30 days later, the rats were reduced to 85% of their free feeding weights and allowed to obtain 45mg food pellets on

a fixed ratio 1 (FR1) schedule for 5 consecutive days. Rats given sucrose or ethanol did not differ in their performance on FR1 and DRL 6 sec schedules. However, when the DRL interval was lengthened to 12, 18, or 24 seconds, the ethanol group required more sessions than the sucrose group to reach criterion performance. After increases in the DRL interval, the modal interresponse time of the ethanol group shifted more slowly than that of the sucrose group. 20 references. (Author abstract modified)

001451 Dettmar, P. W.; Cowan, A.; Walter, D. S. Department of Pharmacology, Reckitt & Colman, Kingston-upon-Hull HU8 7DS, England **Naloxone antagonizes behavioural effects of d-amphetamine in mice and rats.** Neuropharmacology (Oxford). 17(12):1041-1044, 1978.

The influence of naloxone on two characteristic behavioral effects of d-amphetamine was studied in rodents. Subcutaneously (sc) administered naloxone (0.3,1, and 3mg/kg) antagonized the increase in spontaneous locomotor activity normally induced by 2 mg/kg sc d-amphetamine in male MFI/0la mice. At 0.3,1. and 3mg/kg, but not at 10 and 30mg/kg sc, naloxone antagonized d-amphetamine induced ipsilateral turning in male Sprague-Dawley rats lesioned unilaterally with 6-hydroxydopamine in the substantia nigra. It is suggested that these behavioral effects of d-amphetamine involve two components: an action on dopaminergic neurons (naloxone insensitive component) and activity in releasing endogeneous opiates, which act via an opiate receptor to influence dopaminergic activity (naloxone insensitive component). 33 references. (Author abstract modified)

001452 Domjan, Michael. Dept. of Psychology, University of Texas, Austin, TX 78712 **Effects of proximal unconditioned stimulus preexposure on ingestional aversions learned as a result of taste presentation following drug treatment.** Animal Learning & Behavior. 6(2):133-142, 1978.

The proximal unconditioned stimuli (US) preexposure effect was investigated using taste aversions conditioned by exposing subjects to a 1.0% saccharin solution 30 min. after an injection of lithium chloride. The aversion learning was disrupted if subjects had also received an additional lithium injection some time earlier (Experiments 1-3). This interference effect of US preexposure was a decreasing function of the preexposure interval, beyond the optimal interval for observing the phenomenon (Experiment 1), and was directly related to the dose of the preexposure injection (Experiment 2). No interference with conditioning occurred at short preexposure intervals (Experiment 1), probably because under these circumstances the preexposure injection itself conditioned a strong aversion (Experiment 4). At moderate but not at short preexposure intervals, the interference with aversions learned as a result of taste exposure following drug injection was comparable to the interference with learning in a more conventional forward conditioning procedure (Experiments 3 and 4). These findings are similar to previously documented effects of proximal conditioned stimuli and US-preexposure and are consistent with recent stimulus rehearsal and opponent-process theories. 20 references. (Author abstract modified)

001453 Duncan, Gary E.; Dagirmanjian, Rose. Department of Pharmacology and Toxicology, University of Louisville, P.O. Box 35260, Louisville, KY 40232 **Delta9-tetrahydrocannabinol sensitization of the rat brain to direct cholinergic stimulation.** Psychopharmacology (Berlin). 60(3):237-240, 1979.

The effects of delta9-tetrahydrocannabinol (THC) on direct cholinergic stimulation of the male Sprague-Dawley rat brain were investigated. THC (3 and 6mg/kg, i.p.)potentiated the effects of carbachol injection into the lateral septal nucleus, as manifested by the enhancement of the drinking response elicited by the septal carbachol injection and by potentiation of the tendency of the carbachol injection to induce abnormal motor responses. Although atropine (10mg/kg, i.p.)completely blocked the carbachol induced drinking, atropine did not completely block the drinking response when THC was given with carbachol. Results indicate that THC may sensitize a limbic cholinergic system. 16 references. (Author abstract modified)

001454 Duvoisin, Roger C.; Heikkila, Richard E.; Manzino, Lawrence. Dept. of Neurology, Mount Sinai School of Medicine, City University of New York, Fifth Avenue and 100th Street, New York, NY 10029 **Circling induced by dopamine uptake inhibitors.** Journal of Pharmacy and Pharmacology (London). 30(11):714-716, 1978.

The behavioral effects of the dopamine uptake inhibitors mazindol, nomifensine, and dita were compared with those of amphetamine in Sprague-Dawley rats with unilateral nigral lesions. When injected intraperitoneally 3 months after lesioning, all four drugs induced vigorous ipsilateral circling. Mazindol and nomifensine produced circling nearly comparable in intensity and duration to that induced by amphetamine; circling following dita was less vigorous and disappeared within 2 hours of injection. After all four drugs, animals exhibited piloerection, exophthalmos, and increased sniffing, grooming, and exploratory activity. Results indicate that the uptake inhibitors are functionally comparable to amphetamine, a potent dopamine releaser, in inducing rotational behavior in rats with selective unilateral lesions of the dopaminergic nigrostriatal pathway. 10 references.

001455 Dzoljic, M. R.; Godschalk, M. Department of Pharmacology, Medical School, Erasmus University, P.O. Box 1738, Rotterdam, The Netherlands **The role of different dopamine receptors in electrophysiological alertness.** Waking and Sleeping (Eizingen-Wurzburg). 2(3):153-155, 1978.

The relationship between electrocortical alertness and drugs affecting two functionally distinct dopaminergic (DA) systems in the rat was studied. The activation of both DA excitatory receptors and DA inhibitory receptors with amphetamine and (3,4-dihydroxy-phenylamino)-2-imidazoline (DPI), respectively, resulted in electrocortical alertness which was blocked by parenteral administration of haloperidol. Local application of DPI or ergometrine in the n. accumbens or in the n. caudatus induced desynchronization of the electrocortigram. Local application of haloperidol blocked only the effect of ergometrine, leaving the effect of DPI unaltered. The results suggest that an alerting effect of dopaminergic drugs is finally mediated via haloperidol sensitive pathways, but not all dopaminergic drugs act via direct stimulation of haloperidol sensitive receptors. Experiments involving the local administration of DA drugs revealed the preponderance of DA inhibitory receptors in the n. accumbens compared with the n. caudatus. In addition, the experiments emphasized the role of the n. accumbens in electrocortical alertness. 23 references. (Author abstract modified)

001456 Echols, Stanley D. Merrell Research Center, Cincinnati, OH 45215 **Reverse tolerance to amphetamine of mice bearing unilateral striatal lesions: effect upon the circling response to apomorphine.** Life Sciences (Oxford). 24(8):691-696, 1979.

The possibility that presynaptic dopaminergic changes are responsible for the development of reverse tolerance to amphetamine (increasing response to a constant dose on repeated administration) was investigated. When male Swiss-Webster mice with unilateral lesions of the striatum were given weekly doses of amphetamine, their circling response increased with successive doses. The circling response to the direct dopaminergic agonist apomorphine (0.4mg/kg, subcutaneously) also increased significantly in lesioned mice after four weekly doses of 4mg/kg

d-amphetamine. The responses to apomorphine of lesioned mice not exposed to amphetamine declined over the same interval. It is concluded that presynaptic effects are not likely to be involved in the phenomenon of reverse tolerance. 17 references. (Author abstract modified)

001457 Eirin, Ana Maria; Santana, Lourdes; Ravina, Enrique; Fernandez, Franco; Sanchez-Abarca, Eladio; Calleja, Jose Maria. Dept. of Organic and Pharmaceutical Chemistry, University of Santiago, Santiago de Compostela, Spain **Synthesis of 3-aminomethyl-1-tetralones as potential neuroleptic agents.** European Journal of Medicinal Chemistry (Paris). 13(6):533-357, 1978.

3-Aminomethyl tetralones, which present the butyrophenone side chain partially incorporated in a semirigid structure, were prepared by Mannich reaction of beta-benzoyl-propionic acids and heterocyclic amines, catalytic reduction of the carbonyl group and subsequent ring closure with polyphosphoric acid. The 3-aminomethyl-1-tetralones were evaluated for neuroleptic activity in male albino mice using the following tests: variation of spontaneous motor activity, hypothermia, evasion, chimney test, rotating rod, and traction. 17 references. Author abstract modified)

001458 Erinoff, Lynda; MacPhail, Robert C.; Heller, Alfred; Seiden, Lewis S. University of California, Mental Retardation Research Center, Center for Health Sciences, 760 Westwood Plaza, Los Angeles, CA 90024 **Age-dependent effects of 6-hydroxydopamine on locomotor activity in the rat.** Brain Research (Amsterdam). 164:195-205, 1979.

Locomotor activity was examined in Sprague-Dawley rats treated at various ages with intraventricular 6-hydroxydopamine (6-OHDA), following pretreatment with subcutaneous pargyline or desmethylimipramine (DMI). Treatment with gargyline and 6-OHDA at 3 days of age, or with 6-OHDA/DMI at 3 and 6 or 11 and 14 days of age, did not alter the early rise in locomotor activity but prevented the decline of activity normally seen during the third and fourth weeks of life. When tested as adults, locomotor activity was greater in rats that had been treated with 6-OHDA/DMI at 3 and 6 or 11 and 14 days of age than in those treated at 20 and 23 days of age; treatment with 6-OHDA/DMI at 46 and 48 days of age had no significant effect on locomotor activity. The 6-OHDA/pargyline treatment produced large decreases in norepinephrine (NE) content in telencephalon and diencephalon and in dopamine (DA) content in striatum; 6-OHDA/DMI also produced large decreases in DA in striatum, but produced only small decreases in NE in telencephalon, diencephalon, and brainstem. Results suggest that the maturation of dopaminergic systems is essential for the suppression of locomotor activity normally seen during development. 22 references. (Author abstract modified)

001459 Estler, C.-J.; Ammon, H. P. T.; Herzog, C. Lehrstuhl fur Toxikologie und Pharmakologie, Universitat Erlangen-Nurnberg, Universitatsstr. 22, D-8520 Erlangen, Germany **Swimming capacity of mice after prolonged treatment with psychostimulants. I. Effect of caffeine on swimming performance and cold stress.** Psychopharmacology (Berlin). 58(2):161-166, 1978.

A comparative study of the effects of a single subcutaneous dose of caffeine (50mcg/g) and 6 weeks' treatment with 150mcg/g oral caffeine on swimming capacity and resistance to cold exposure was performed in mice. In contrast to acute treatment, chronic treatment with caffeine greatly reduced swimming capacity and diminished the animals' ability to withstand cold stress. The detrimental effect of prolonged treatment with caffeine was not due to an accumulation of toxic levels of the drug, and motor coordination was not affected by caffeine treatment. Glycogen, fat stores, fatty acid, and blood glucose levels were similar in control and experimental animals. Results suggest that caffeine may interfere with the animals' ability to mobilize and spend metabolic substrates for energy requirements of skeletal muscle. 15 references. (Author abstract)

001460 Fibiger, H. C.; Lepiane, F. G.; Phillips, A. G. Division of Neurological Sciences, Department of Psychiatry, University of British Columbia, Vancouver V6T 1W5, Canada **Disruption of memory produced by stimulation of the dorsal raphe nucleus: mediation by serotonin.** Brain Research (Amsterdam). 155(2):380-386, 1978.

The effects of electrical stimulation of the dorsal raphe nucleus (DRN) on retention of a step down passive avoidance response were investigated in male Wistar rats. Stimulation of the DRN during the acquisition of the step down passive avoidance response significantly disrupted retention of the response 24 hours later. This disruptive effect could not be attributed to the electrode implant per se, since implanted controls did not differ from unimplanted controls in the retest. Pretreatment with the tryptophan hydroxylase inhibitor parachlorophenylalanine blocked the disruptive effect of DRN stimulation, suggesting that memory disruption after stimulation of the DRN is mediated by a serontonergic system. These results do not support the view that inhibition of serotonergic activity enhances learning and memory. 17 references.

001461 Fleisher, Lloyd Norman. City University of New York **Hallucinogen-induced rotational behavior in rats. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 77-27627, HC$15. MF$7.50. 168 p. 1977.

Agents which interact with serotonergic and dopaminergic transmission were examined for their capacity to induce rotational behavior in rats, and for possible interaction with LSD induced rotation. LSD, mescaline, and 5-methoxy-N,N-dimethyltryptamine (MDMT) induced dose dependent induced rotation which was consistent in direction from week to week. LSD rotation was found to be in the same direction as amphetamine induced rotation but not the same as apomorphine induced rotation for individual animals. The investigation suggests that the mechanism by which LSD, mescaline, and MDMT induced rotation is consistent with an inhibitory action on the serotonin containing midbrain raphe neurons, which results in disinhibition of nigrostriatal activity. The dopaminergic properties of LSD and the noradrenergic properties of mescaline were proposed to attenuate rotation resulting from disinhibition of nigrostriatal activity by interacting with presynaptic nigrostriatal dopamine autoreceptors (for LSD), or by interacting with a locus coeruleus to frontal cortex to striatum pathway (for mescaline). (Journal abstract modified)

001462 Franklin, K. B. J. Dept. of Psychology, McGill University, 1205 McGregor Avenue, Montreal, P. Q. H3A 1B1, Canada **Catecholamines and self-stimulation: reward and performance effects dissociated.** Pharmacology Biochemistry and Behavior. 9(6):813-820, 1978.

Effects on reward and performance components of the depression of self-stimulation induced by the dopamine antagonist pimozide and clonidine, a drug which acts on presynaptic alpha-adrenoceptors to inhibit noradrenaline release, were investigated. Pimozide shifted reward summation functions (RSF) in the direction indicating a reduced rewarding effect of brain stimulation but did not proportionately depress the maximum running speed. The larger doses of pimozide led to extinction of alley running. Clonidine similarly reduced the rewarding potency of brain stimulation but also depressed running speed. Piperoxane antagonized clonidine's effect on the RSF location, but added to the depression of running speed, thus confirming that drug ef-

fects on reward are dissociable from performance effects. It is suggested that dopamine mechanisms are directly involved in the putative reward system and noradrenaline may be indirectly involved in self-stimulation via an effect on cerebral metabolism. 34 references. (Author abstract modified)

001463 Fujita, Mitsunobu; Ishii, Makoto; Shibuya, Takeshi. Department of Pharmacology, Tokyo Medical College, Tokyo, Japan **Effects of TO-125 (Benorilate) on the central nervous system.** Journal of Tokyo Medical College (Tokyo). 36(1):119-126, 1978.

Experiments were performed to analyze the central nervous system action of 4-acetamidophenyl salicylate acetate (TO-125). The following results were obtained: 1) in the behavioral observation, TO-125 had little effects on the naive behavior in doses of 50, 100, 200, and 500mg/kg (p.o.)in rabbits, and 10, 20, and 50mg/kg (i.v.)in cats; 2) in the EEG activity, TO-125 had no significant effects on the acute spontaneous EEG pattern of neocortex, hippocampus, and amygdala in doses up to 200mg/kg (p.o.)in rabbits. The only observed change, however, was a tendency of slight depression in the EEG pattern induced by a dose of 500mg/kg (p.o.); 3) in the spinal reflex activity. TO-125 induced none of the changes on the electrical activity of monosynaptic and polysynaptic reflexes in doses up to 50mg/kg (i.v.)in cats. It is concluded that TO-125 has no remarkable potencies on the central nervous system activity. 4 references. (Journal abstract modified)

001464 Gallagher, M.; Kapp, B. S. Department of Psychology, University of Vermont, Burlington, VT 05401 **Manipulation of opiate activity in the amygdala alters memory processes.** Life Sciences. 23(19):1973-1977.

The effect of the opiate agonist levorphanol injected into the amygdala complex of rats following passive avoidance conditioning was studied. Time dependent and dose dependent decreases in retention were produced, and the effects were observed to be stereospecific. Posttraining administration of the opiate antagonist naloxone into the amygdala significantly increased retention of passive avoidance conditioning in a time dependent and dose dependent manner. These opposing effects of opiate agonist and antagonist administration were blocked by combined administration of levorphanol and naloxone. These data support a possible role for amygdala opiold peptides in time dependent memory processes. 17 references. (Author abstract modified)

001465 Gebhart, G. F.; Toleikis, J. R. Department of Pharmacology, University of Iowa, Iowa City, IA 52242 **An evaluation of stimulation-produced analgesia in the cat.** Experimental Neurology. 62(3):570-579, 1978.

The analgesia produced by focal electrical brain stimulation of the periaqueductal central gray matter (PAG) was examined in 24 cats chronically implanted with PAG and radial nerve bipolar stimulating electrodes. After the cats were trained to escape noxious radial nerve stimulation by crossing a low barrier in a shuttle box, the effects of focal electrical stimulation of the PAG on escape threshold and latency were compared to those of morphine and chlorpromazine. Analgesic brain stimulation loci in the cat PAG were localized in the caudal ventrolateral PAG. The most efficacious analgesia producing loci were found at the ventrolateral edge of the PAG, suggesting a catecholaminergic involvement. Tolerance to repeated analgesia producing electrical brain stimulation was apparent. Naloxone failed to attenuate or antagonize the analgesia produced by focal electrical stimulation of the cat PAG. 25 references. (Author abstract modified)

001466 Gilman, Dennis P.; Hitt, John C. Department of Psychology, Texas Christian University, Fort Worth, TX 76129 **Effects of gonadal hormones on pacing of sexual contacts by female rats.** Behavioral Biology. 24(1):77-87, 1978.

The role of exogenous hormones in mediating pacing of reproductive encounters by ovariectomized female rats was investigated. Five estradiol benzoate (EB) treatment groups (3.3, 10, 30, 60, or 90mcg/kg) were each given five weekly tests in a two compartment escape/reentry mating arena in the presence of three sexually vigorous males. Prior to testing, each subject received one of four dosages of progesterone (1, 2, 4, or 8mg/kg) or oil. The mean time subjects spent in the escape compartment following an intromission or ejaculation decreased for all EB treatment groups as progesterone levels increased. The percentage of intromissions followed by retreats to the escape compartment decreased similarly for all EB treatment as a function of increasing levels of EB alone or in combinations with increasing levels of progesterone. 29 references. (Author abstract)

001467 Glick, Stanley D.; Crane, Linda A. Dept. of Pharmacology, Mount Sinai School of Medicine, CUNY, Fifth Avenue and 100th Street, New York, NY 10029 **Opiate-like and abstinence-like effects of intracerebral histamine administration in rats.** Nature (London). 273(5663):547-549, 1978.

The role of histamine in the central nervous system was investigated in female Sprague-Dawley rats who were microinjected with histamine in various regions of the brain. Behavior testing, response to pin prick and heat, and the presence or absence of catalepsy were observed. Results confirm the involvement of the rostral hypothalamus in hypothermia and implicate the raphe nuclei as the site mediating the catalepsy. The delayed appearance of effects following intrahippocampal administration of histamine is discussed. It is suggested that this delay represents the time necessary for the drug to diffuse and reach a threshold concentration in a critical volume of tissue. Preliminary data indicate that H1 and H2 receptors are differentially and selectively involved in different effects of histamine. The histamine induced hippocampal symptoms were similar to an opiate abstinence syndrome, whereas the analgesia and catalepsy resulting from brainstem injections seemed analogous to acute opiate effects. It is suggested that specific histamine receptors may be involved in specific aspects of opiate abstinence, and the results may have therapeutic implications. 30 references.

001468 Go, Koichiro; Tsurumi, Kaito; Fujimura, Hajime. Department of Pharmacology, Gifu University School of Medicine, Tsukasamachi, Gifu 500, Japan **Anti-convulsant effect of phthalazino-2,3b-phthalazine-5(14H),12(7H)-dione (L-5418). I. Behavioral effect.** Japanese Journal of Pharmacology (Koyoto). 28(1):1-12, 1978.

The anticonvulsant effects of phthalazino-2,3b-phthalazine-5(14H),12(7H)-dione (L-5418) were compared with those of other drugs currently used as anticonvulsants. L-5418 inhibited tonic convulsions induced by penetetrazol and N-sulfamoyl-hexahydroazepine in mice, but did not inhibit clonic convulsions induced by those compounds or by picrotoxin and bemegride. Trimethadione, phenobarbital and glutethimide inhibited both types of convulsions. When L-5418 was administered alone, the animals did not lose the righting reflex or show signs of muscle relaxation in the inclined screen and rotarod tests. The compound had no influence on the aggressive behavior induced by electrical stimulation or by olfactory bulb ablation. Results indicate that L-5418 possesses a selective anticonvulsant effect, with no sedative, tranquilizing, or adverse motor effects. L-5418 may be useful in treating grand mal epilepsy, since it is less toxic than diphenylhydantoin and carbamazepine. 11 references. (Author abstract modified)

001469 Goff, D.; Miller, A. A.; Webster, R. A. Pharmacology Laboratory, Wellcome Research Laboratories, Beckenham, Kent BR3 3BS, England **Anticonvulsant drugs and folic acid on the development of epileptic kindling in rats.** British Journal of Pharmacology (London). 64(3):406P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effects of folic acid and anticonvulsant drugs on the development of epileptic kindling in male Wistar rats are reported. The response of control rats (measured by clonus duration) to electrical stimulation of the frontal cortex was significantly increased after nine trials (kindling). Phenobarbitone, diazepam, and ethanolamine-0-sulphate prevented the onset of kindling without reducing the clonus response. Folic acid, at a subconvulsive dose, consistently prolonged clonus with a significant increase at week 10; following the cessation of treatment three rats showed epileptic EEF activity that persisted for at least 10 weeks. These findings indicate that elevated brain folate concentrations enhance kindling and that anticonvulsant drugs can limit the progressive intenstification of seizures. 4 references. (Author abstract modified)

001470 Gordon, John H.; Nance, Dwight M.; Wallis, Cleatus J.; Gorski, Roger A. Department of Pharmacology, Chicago Medical School, Chicago, IL 60612 **Effects of septal lesions and chronic estrogen treatment on dopamine, GABA and lordosis behavior in male rats.** Brain Research Bulletin. 4(1):85-89, 1979.

The neurochemical alterations underlying the enhanced behavioral sensitivity to acute administration of estradiol benzoate (EB, 2mcg/day for 3 days) in male Sprague-Dawley rats treated with EB (2mcg/day) for 2-4 weeks immediately following septal lesions (SL) were examined. Acute administration of EB in males treated chronically with EB after SL resulted in enhanced lordotic responses, decreased tyrosine hydroxylase activity in the region of dopamine (DA) terminals (striatum and nucleus accumbens), and increased glutamic acid decarboxylase (GAD) activity in the region of DA cell bodies (substantia nigra and ventral tegmentum). The increase in GAD activity may be the result of altered neuronal feedback due to plastic changes during chronic EB treatment after SL. This probable increase in inhibitory tone in the region of DA cell bodies may explain the decreased DA turnover in these animals. Since DA may be inhibitory to the display of lordosis behavior, the SL/EB treated males may show enhanced lordotic response as a result of this reduction in DA activity. 29 references. (Author abstract modified)

001471 Grevert, Priscilla; Baizman, E. R.; Goldstein, Avram. Addiction Research Foundation and Stanford University, Palo Alto, CA 94304 **Naloxone effects on a nociceptive response of hypophysectomized and adrenalectomized mice.** Life Sciences (Oxford). 23(7):723-728, 1978.

The effect of naloxone antagonism of pituitary endorphins upon naloxone induced reduction of escape latency of mice from a hot plate was investigated. Naloxone (1 and 3 mg/kg) or saline was administered to adrenalectomized, sham-adrenalectomized, and hypophysectomized, and sham-hypophysectomized mice prior to placing them on a 55 degrees centigrade hot plate. Naloxone reduced the jump latency of the adrenalectomized, sham-adrenalectomized, and sham-hypophysectomized mice, but did not reduce the jump latency of hypophysectomized mice. Hypophysectomy and adrenalectomy per se did not significantly affect the jump latency. These results indicate that the pituitary is necessary for naloxone to reduce the escape latency of mice on the hot plate. The possibility of a hyperalgesic factor is suggested. 24 references. (Author abstract modified)

001472 Haber, Suzanne; Hatsukami, Tom; Berger, Philip A.; Barchas, Jack D.; Akil, Huda. Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, CA 94305 **Naloxone blocks amphetamine-induced rearing: potential interaction between catecholamines and endorphins.** Progress in Neuro-Psychopharmacology (Oxford). 2(4):425-430, 1978.

In a study of the blocking by naloxone of amphetamine induced rearing in rats, potential interactions between catecholamines and endorphins are discussed. Naloxone did not alter amphetamine induced hyperactivity or stereotypy, but did selectively block rearing behavior. This effect raises two issues: 1) it suggests that the first phase of amphetamine induced behavior in rats (hypermotility) might be considered as having two subcomponents modulated by different mechanisms, and 2) it adds support to a growing literature on possible catecholamine/endorphin interactions. 17 references. (Author abstract modified)

001473 Haigler, Henry J.; Mittleman, Robert S. Department of Pharmacology, Emory University School of Medicine, Atlanta, GA 30322 **Analgesia produced by direct injection of morphine into the mesencephalic reticular formation.** Brain Research Bulletin. 3(6):655-662, 1978.

Bilateral injections of morphine (10mcg on each side) into the mesencephalic reticular formation (MRF) of male Sprague-Dawley rats significantly elevated the nociceptive threshold on the tail flick and hemostat pinch tests, but lower doses had no analgesic effect. After morphine was injected into the MRF, naloxone administered at the same site (15mcg, bilaterally) or subcutaneously (10mg/kg) antagonized the antinociceptive effects of morphine. Thirty percent of the rats bilaterally injected with 10mcg morphine displayed hyperreactivity to mild stimuli. This hyperreactivity was not attenuated by large intracerebral systemic doses of naloxone. It is concluded that morphine produced analgesia by a specific narcotic mechanism in the MRF. 24 references. (Author abstract modified)

001474 Hano, Jozef; Vetulani, Jerry; Sansone, Mario; Oliverio, Alberto. Institute of Pharmacology, Polish Academy of Sciences, 31-343 Krakow, Poland **Effect of clonidine, amphetamine, and their combinations on the locomotor activity of CD-1 and C57BL/6 mice.** Pharmacology Biochemistry and Behavior. 9(6):741-746, 1978.

The effect of clonidine, amphetamine and their combinations on the locomotor activity of CD-1 and C57BL/6 mice were investigated. Clonidine inhibited the exploratory motor activity of C57BL/6 mice not habituated to the testing conditions. In CD-1 mice, clonidine did not depress exploratory activity but did elevate the basal locomotor activity of animals both nonhabituated and habituated to testing conditions. Amphetamine increased the locomotor activity of many C57BL/6 mice and conversely inhibited the locomotion of many CD-1 mice. In both strains, amphetamine in doses up to 2mg/kg was unable to alter effects produced by clonidine. Results suggest that the locomotor activity of C57BL/6 mice is more sensitive than that of CD-1 mice to drugs affecting the central noradrenergic system. 40 references. (Author abstract modified)

001475 Harrell, Ernest H.; Haynes, Jack R.; Lambert, Paul L.; Sininger, Rollin A. Dept. of Psychology, North Texas State University, Denton, TX 76203 **Reversal of learned helplessness by peripheral arousal.** Psychological Reports. 43(3):1211-1217, 1978.

A replication study of the reversal of learned helplessness in rats by peripheral arousal via administration of metaraminol bitartrate (Aramine), is presented. Thirty two rats were exposed to either no shock or a sequence of inescapable shock previous-

ly shown to produce learned helplessness. Twenty four hours later, Aramine or physiological saline was injected prior to testing in a bar-press, shock escape task. Inescapable shock 1 day prior to testing produced a severe response deficit in saline controls, but not in the drug group. Reversal of learned helplessness by peripheral autonomic arousal indicates that a reevaluation of the learned helplessness model of human depression may be necessary. 29 references. (Author abstract modified)

001476 Harrigan, Stephen E.; Downs, David A. Warner-Lambert/Parke-Davis, Pharmaceutical Research Division, Dept. of Pharmacology, 2800 Plymouth Road, Ann Arbor, MI 48105 **Self-administration of heroin, acetylmethadol, morphine, and methadone in rhesus monkeys.** Life Sciences. 22(7):619-623, 1978.

The self-administration of heroin, alpha-lambda-acetylmethadol (LAAM), morphine, and methadone was examined in rhesus monkeys for a range of doses. Heroin, LAAM, morphine, and methadone each maintained self-administration in the animals. The order of relative potency was, in decreasing order: heroin, LAAM, morphine, and methadone. Total daily drug intake increased as dose per injection increased; maximum daily intake was inversely related to relative potency. At high doses, self-injection of methadone and LAAM caused stupor and/or respiratory failure in some monkeys. These toxic effects were partly or completely reversible by naloxone. 17 references. (Author abstract modified)

001477 Hatton, Daniel C.; Tankle, Reva; Lanthorn, Thomas; Meyer, Merle E. University of Florida, Gainesville, FL 32611 **Serotonin and tonic immobility in the rabbit.** Behavioral Biology. 24(1):97-100, 1978.

The effect of central and peripheral injections of serotonin on the duration of tonic immobility (TI) in Giant Czech x Tex rabbits was examined. Results indicate that cisternal injections of serotonin reduced the duration of TI in rabbits, while peripheral injections did not significantly affect the duration of immobility. Results were not in agreement with Wallnau and Gallup's 1977 serotonergic midbrain raphe model of tonic immobility; and data suggest that serotonin influences on TI vary across species. 17 references. (Author abstract modified)

001478 Heal, D. J.; Green, A. R. M.R.C. Clinical Pharmacology Unit, Radcliffe Infirmary, Oxford OX2 6HE, England **Repeated electroconvulsive shock increases the behavioural responses of rats to injection of both dopamine and dibutyryl cyclic AMP into the nucleus accumbens.** Neuropharmacology (Oxford). 17(12):1085-1087, 1979.

Behavioral responses to bilateral injections of 5mcg dopamine and 6.25 mcg dibutyryl cyclic adenosine monophosphate (AMP) into the nucleus accumbens were investigated in male Sprague-Dawley rats, before and after exposure to five electroconvulsive shocks (ECS) in a 10 day period. Repeated ECS enhanced the behavioral responses to both dopamine and dibutyryl cyclic AMP. These results suggest that the enhanced mesolimbic dopaminergic responses seen after repeated ECS may result from changes distal to the monamine receptor. 11 references. (Author abstract modified)

001479 Heal, D. J.; Green, A. R. MRC Clinical Pharmacology Unit, Radcliffe Infirmary, Oxford OX2 6HE, England **Administration of thyrotropin releasing hormone (TRH) to rats releases dopamine in n. accumbens but not n. caudatus.** Neuropharmacology (Oxford). 18(1):23-31, 1979.

Bilateral injection of thyrotropin releasing hormone (TRH, 10mcg) into the nucleus accumbens of male Sprague-Dawley rats produced a short-lasting increase in coordinated locomotor activity and behavioral changes similar to those produced by an injection of dopamine (DA) at this site. These effects were potentiated by pretreatment with tranylcypromine (5mg/kg i.p.). The TRH effects were blocked by bilateral injection of 2.5mcg haloperidol into the accumbens or by destruction of the presynaptic dopamine terminals with 6-hydroxydopamine. Peripheral injection of TRH (20mg/kg) produced behavioral changes similar to those observed after central administration. These effects were not enhanced by tranylcypromine pretreatment, but were blocked by peripheral injection of haloperidol. Injection of thyroid stimulating hormone (TSH, 20mg/kg i.p.)produced no behavioral changes. Injection of TRH (20mg/kg i.p.)to rats with unilateral nigrostriatal lesions failed to induce circling and pretreatment with TRH (2mg/kg i.p.)failed to enhance turning induced by methamphetamine in tranylcypromine treated animals. Results suggest that TRH releases DA in the nucleus accumbens but not in the caudate nucleus, and that peripherally administered TRH does not act by release of TSH. 26 references. (Author abstract modified)

001480 Hecht, Karl; Dorner, Gunter. Nervenklinik des Bereiches Medizin (Charite) der Humboldt-Universitat, Schumannstrasse 20/21, DDR-104, Berlin, Germany **/On the possibility of preprogramming behavior patterns by altering neurotransmitter metabolism in early postnatal ontogenesis of albino rats./** Zur Moglichkeit einer Vorprogrammierung von Verhaltensweisen durch Veranderung des Neurotransmitter-Stoffwechsels in der fruhpostnatalen Ontogenese von Albinoratten. Psychiatrie, Neurologie und Medizinische Psychologie (Leipzig). 30(7):385-396, 1978.

Changes in neurotransmitter concentration brought about by the administration of neurotropic pharmaceuticals to albino rats at the time of brain differentiation are reported. These changes may have a lasting effect on reactivity and adaptability of adult animals to environmental factors and give rise to specific behavior patterns. It was found that: 1) pargyline, when administered neonatally, reduces learning power, retention power, and decision-making power; 2) reserpine improved learning power but simultaneously decreases both retention power and decision-making ability; and 3) pyridostigmine markedly improves adaptability, evidenced in higher learning power, greater retentiveness, and better decision-making ability. 26 references. (Journal abstract modified)

001481 Hill, Shirley Y.; Reyes, Renato B. Department of Psychiatry, Univerisity of Pittsburgh School of Medicine, 3811 O'Hara Street, Pittsburgh, PA 15621 **Effects of L-tryptophan and ethanol on sleep parameters in the rat.** Psychopharmacology (Berlin). 58(3):229-233, 1978.

Sleep parameters were monitored in Sprague-Dawley rats following a single 2g/kg oral dose of ethanol, a 600mg/kg oral dose of L-tryptophan, and simultaneous administration of both drugs. Ethanol reduced rapid eye movement (REM) sleep and increased slow wave sleep significantly. L-tryptophan significantly reduced REM sleep latency but had no other effects on sleep parameters. Administration of both drugs resulted in a significantly shorter REM latency than that observed for ethanol administered alone. Results are discussed in terms of possible changes in the biosynthesis of 5-hydroxytryptamine. 30 references. (Author abstract modified)

001482 Huidobro-Toro, J. Pablo; Way, E. Leong. Department of Pharmacology, School of Medicine, University of California, San Francisco, CA 94143 **Single-dose tolerance to antinociception, and physical dependence on beta-endorphin in mice.** European Journal of Pharmacology (Amsterdam). 52(2):179-189, 1978.

Beta-endorphin (B-EN) injected intracerebroventricularly in male ICR mice produced a rapid onset, dose dependent antino-

ciceptive effect. The median analgesic dose (AD50) 30 minutes following administration was 270ng/mouse (3.7nmoles/kg). A single dose of B-EN produced dose dependent tolerance, demonstrable with doses twice or more the AD50. Tolerance was maximal about 12 hours after the priming dose and disappeared within 48 hours. Tolerance was accompanied by some degree of physical dependence, evidenced by signs of naloxone precipitated withdrawal similar to those seen in morphine dependent rats or mice. Tolerance development to B-EN was blocked by the simultaneous administration of naloxone and by pretreatment with 0.3mg/kg actinomycin D or 30mg/kg cycloheximide 30 minutes before B-EN. Results suggest that single dose tolerance to B-EN is initiated by processes similar to those involved in tolerance induced by chronic morphine administration. 33 references. (Author abstract modified)

001483 Hunt, Glenn E.; Atrens, Dale M.; Becker, Frederick T.; Paxinos, George. Department of Psychiatry, University of Sydney, Sydney, 2006, NSW, Australia **Alpha-adrenergic modulation of hypothalamic self-stimulation: effects of phenoxybenzamine, yohimbine, dexamphetamine and their interactions with clonidine.** European Journal of Pharmacology (Amsterdam). 53(1):1-8, 1978.

The alpha-adrenoceptor agonist clonidine (12.5-50.0mcg/kg ip) produced a dose dependent increase in the latency to initiate lateral hypothalamic self-stimulation in male Sprague-Dawley rats. The postsynaptic alpha-adrenoceptor antagonist phenoxybenzamine (0.2-0.8mg/kg) had no effect on self-stimulation by itself, but potentiated the inhibitory effects of clonidine. Concurrent escape behavior to intracranial stimulation was not changed by clonidine or clonidine/phenoxybenzamine, suggesting that their inhibitory effect is specific to the rewarding component of hypothalamic stimulation. Yohimbine (0.5-2.0mg/kg) produced a dose dependent increase in both response latencies. Dexamphetamine (0.25-0.50mg/kg) reversed clonidine induced inhibition of self-stimulation reward in a specific and dose dependent fashion; this reversal could be blocked by pretreatment with the catecholamine synthesis inhibitor alpha-methol-p-tyrosine. Results support the concept that alpha-adrenoceptors play a critical role in the modulation of hypothalamic self-stimulation reward and suggest that the inhibitory effects of clonidine on self-stimulation reflect an agonist effect on presynaptic alpha-adrenoceptors. 26 references. (Author abstract modified)

001484 Isaacson, Robert L.; Green, Edward J. Department of Psychology, Center for Neurobehavioral Sciences, State University of New York, Binghamton, NY 13901 **The effect of ACTH1-24 on locomotion, exploration, rearing, and grooming.** Behavioral Biology. 24(1):118-122, 1978.

The effects of ACTH1-24 on rat behavior in a large open field were examined. Locomotion, exploration, rearing, and grooming were measured during ten minute testing sessions. When tested after injection of intraventricular saline, locomotion, exploration, and rearing were the most frequently observed behaviors; grooming occurred only infrequently. When tested after intraventricular injection of ACTH1-24; locomotion, exploration, and rearing were greatly reduced, while grooming was markedly increased. These results indicate that the induction of excessive grooming by ACTH1-24 is not restricted to the small testing chambers usually used in such experiments and that the effect of the ACTH fragment is specific to grooming. Its effect is not an enhancement of the most prominent response being made in a particular situation. 10 references. (Author abstract modified)

001485 Izquierdo, Ivan; Elisabetsky, Elaine. Departamento de Biofisica e Fisiologia, Escola Paulista de Medicina, Rua Botucatu 862, 04023 Sao Paulo, SP, Brazil **Four memory channels in the rat brain.** Psychopharmacology (Berlin). 57(2):215-222, 1978.

Rats were trained in a shuttlebox to emit shuttle responses to a buzzer using three different routines: classical conditioning, an avoidance paradigm with no stimulus pairing, and a typical two-way avoidance paradigm. Training in either of the first two conditions influenced subsequent learning in the two-way avoidance situation. Rats were then injected with amphetamine, metrazol, or nicotine immediately after training by classical conditioning or by avoidance training without stimulus pairing. When retested 7 days later, rats trained and retested by classical conditioning showed no drug effects. Rats trained by classical conditioning and retested in the avoidance paradigm were insensitive to amphetamine and nicotine but showed improved performance after metrazol. The memory of rats trained and retested in the avoidance paradigm was enhanced by amphetamine and metrazol but not by nicotine. Findings indicate that there are four distinct memory channels in the rat and argue against current concepts of the unity of mnemonic processes. 33 references.

001486 Jacquet, Yasuko F. New York State Research Institute for Neurochemistry, Rockland Research Institute, Ward's Island, NY 10035 **Opiate effects after adrenocorticotropin or beta-endorphin injections in the periaqueductal gray matter of rats.** Science. 201(4360):1032-1034, 1978.

Injections of adrenocorticotropic hormone (ACTH) into the periaqueductal gray matter of drug naive rats resulted in a dose dependent opiate abstinence syndrome characterized by fearful hyperreactivity and explosive motor behavior. Injecting shorter chains of ACTH caused attenuated forms of this behavior. Injections of beta-endorphin at this same site caused opposite behavior: sedative, analgesic, and catatonic. If the effects of morphine are mediated by two classes of receptor, the endogenous ligand of the receptor which is not stereospecific and naloxone insensitive may be ACTH. The neuropeptides ACTH and endorphin may be part of an integrated neuromodulatory system, and the opiate abstinence syndrome may be the result of an altered interaction between the two receptor systems. 23 references. (Author abstract)

001487 Jarbe, T. U. C. University of Uppsala, Department of Psychology, P.O. Box 227, S-75104 Uppsala, Sweden **Delta9-tetrahydrocannabinol: tolerance after noncontingent exposure in rats.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 231(1):49-56, 1978.

An examination of whether or not tolerance to delta 9-tetrahydrocannabinol (THC) occurs in rats after noncontingent, nonreinforced exposure is described. Rats pretreated daily with (8mg/kg) during 14 days showed tolerance to THC-induced hypothermia and depression of CAR acquisition in a shuttlebox. The noncontingent exposure of THC also produced tolerance to spontaneous (unlearned) behaviors, as measured in a open-field test. Data suggest no essential role for learned tolerance in the sense that animals have to learn to perform under the influence of THC for several of these behaviors. 38 references. (Author abstract)

001488 Jensen, Marilyn Ann. University of Minnesota **Effects of methadone and pentobarbital on schedule-controlled responding in the pigeon. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7802681, HC$15. MF$7.50. 137 p. 1977.

The effects of methadone, pentobarbital, and their combination on schedule controlled responding in pigeons were examined using a chain FR 3 schedule of food reinforcement in which food presentation followed completion of three 30 sec fixed-interval components associated with different stimuli as the

behavioral baseline. Results of three experiments indicate that pentobarbital ameliorates the suppressive effect of the first chain stimulus on responding. Methadone, which increases pausing in the first component, does not attenuate the effect of the first stimulus. Pentobarbital may also increase the conditioned reinforcing effectiveness of the second chain stimulus, whereas behavior after methadone administration is not maintained by the weak conditioned reinforcing properties of the second chain stimulus. After the concomitant administration of methadone and pentobarbital, the latter's rate increasing effect in the first component antagonizes the rate reducing of methadone. Dramatic increases in overall response rate produced by pentobarbital alone are still evident when administered with methadone, and the combination increases responding more than either drug alone. (Journal abstract modified)

001489 Jerlicz, Maria; Kostowski, Wojciech; Bidzinski, Andrzej; Hauptmann, Miroslawa. Dept. of Pharmacology and Physiology of the Nervous System, Psychoneurological Institute 02-957 Warsaw, Poland **Effects of lesions in the ventral noradrenergic bundle on behavior and response to psychotropic drugs in rats.** Pharmacology Biochemistry and Behavior. 9(6):721-724, 1978.

The effects of lesions in the ventral noradrenergic bundle (VB) on behavior and response to psychotropic drugs in rats were investigated. Bilateral lesions of the VB decreased concentration of noradrenaline within the mesendiencephalon but not in the cortex. Lesioned rats showed increased activity measured in the open-field test. Cataloptogenic effects of chlorpromazine and haloperidol were almost completely abolished in VB lesioned animals. The stereotypy induced by both amphetamine and apomorphine was unchanged, however. It is supposed that lesions of the VB lead to increased activity in dopaminergic neurons in the brain. 28 references. (Author abstract modified)

001490 Jobe, P. C.; Geiser, P. F.; Ray, T. B.; Woods, T. W.; Mims, M. E. Department of Pharmacology and Therapeutics, Louisiana State University School of Medicine, Shreveport, LA 71130 **The relative significance of spinal cord norepinephrine and 5-hydroxytryptamine in electrically-induced seizure in the rat.** Neuropharmacology (Oxford). 17(3):185-190, 1978.

The effects of various drug treatments on spinal cord norepinephrine (NE) and 5-hydroxytryptamine (5-HT) were compared to the effects of these same treatments on electrically induced spinal cord seizure in the rat to examine the possible influence of spinal cord monoamines, relative to brain monoaminergic influence, on seizure intensity. Depletion of NE stores by 6-hydroxydopamine (6-OHDA) facilitated spinal cord seizures. Desipramine induced protection of noradrenergic neurons against depleting effect of 6-OHDA afforded complete protection against seizure facilitation and unmasked an anticonvulsant effect of 6-OHDA. Depletion of spinal cord 5-HT stores by p-chlorophenylalanine and 5, 7-dihydroxytryptamine did not enhance seizures. Thus it appears that spinal cord noradrenergic but not 5-hydroxytryptaminergic neurons act as attenuators of seizure activity. 20 references. (Author abstract)

001491 Johnson, David N.; Funderburk, William H. Department of Pharmacology, A. H. Robins Research Laboratories, Richmond, VA 23220 **AHR-3219, a new antianxiety agent.** Progress in Neuro-Psychopharmacology (Oxford). 2(4):443-448, 1978.

AHR-3219, a new antianxiety agent with muscle relaxant properties, was compared with diazepam in a series of experiments designed to delineate anticonvulsant, muscle relaxant, and antianxiety activities of the drug. AHR-3219 blocked tonic seizures induced by maximal electroshock or pentylenetetrazol in mice in doses comparable to those of diazepam. The drug produced muscle relaxation in mice or cats in doses comparable to or less than those of diazepam, respectively. The antianxiety activity of AHR-3219, as determined in rats by blockade of natural aversion (disinhibition) or of conditioned suppression (conflict) behavior), was similar to that seen after diazepam. 10 references. (Author abstract modified)

001492 Jolicoeur, F. B.; Wayner, M. J.; Rondeau, D. B.; Merkel, A. D. Brain Research Laboratory, Syracuse University, 601 University Avenue, Syracuse, NY 13210 **The effects of phenobarbital on lithium chloride induced taste aversion.** Pharmacology Biochemistry and Behavior. 9(6):845-847, 1978.

The dose related effects of phenobarbital on lithium chloride induced taste aversion were examined in rats adapted to a 23 hr 50 min water deprivation schedule. On the treatment day, animals were offered a novel 0.125% saccharin solution during the 10 min drinking session and were then administered 3.0mEq/kg lithium chloride. The saccharin solution was presented again on 6 subsequent test days. Sodium phenobarbital 20, 40, 60, and 80mg/kg was administered 15 min. prior to drinking on the first test day Results indicate that all doses significantly attenuated taste aversion with the maximal effect occurring with the 60mg/kg dose. 10 references. (Author abstract)

001493 Joseph, James A.; Berger, Rick E.; Engel, Bernard T.; Roth, George S. Gerontology Research Center, NIA, Baltimore City Hospitals, Baltimore, MD 21224 **Age-related changes in the nigrostriatum: a behavioral and biochemical analysis.** Journal of Gerontology. 33(5):643-649, 1978.

Rotational behavior (which is highly dependent on the nigrostriatum and is relatively free from acquisitional or motivational components) was studied to determine the relationship between age related changes in the dopaminergic system and behavior. In the first experiment, rotational behavior was examined prior to unilateral lesions in the substantia nigra of young and old rats; in the second experiment, rotational behavior was examined following unilateral lesions. Before lesioning no preferences for turning to the left or right were seen in either age group following graded doses of amphetamine. However, after radiofrequency lesions of the left substantia nigra, both young and old rats turned predominantly to the left, and the ratio of left to right turns increased as a function of amphetamine dose. However, there were significant differences between young and old rats in the effect of amphetamine on rotational behavior, with old rats showing decided decrements in response strength. Direct dopaminergic stimulation under apomorphine or dopaminergic receptor blockage with haloperidol produced no such age related deficits. Results are discussed in terms of possible presynaptic alterations in dopaminergic functioning with aging. 27 references. (Author abstract modified)

001494 Kilbey, M. Marlyne; Ellinwood, Everett H.; Easler, Martha E. Department of Psychiatry, Duke University Medical Center, Durham, NC 27710 **The effects of chronic cocaine pretreatment on kindled seizures and behavioral stereotypies.** Experimental Neurology. 64(2):306-314, 1979.

The effects of chronic cocaine pretreatment (40mg/kg/day i.p. for 14 days) on kindled seizures and behavioral stereotypies in male Sprague-Dawley rats were examined. Daily electrostimulation of the left amygdala (kindling) was carried out until rats exhibited poststimulation clonic seizures on 2 consecutive days. Rats treated with cocaine prior to kindling reached criterion significantly faster than controls, but this difference was wholly attributable to the faster kindling observed in rats in which cocaine had induced convulsions during the daily treatment. Augmentation of behavioral stereotypies was greater and the propagation of afterdischarges to the caudate occurred sig-

nificantly earlier in rats that had received cocaine prior to the initiation of kindling, regardless of whether or not convulsions had occurred. It is suggested that chronic cocaine administration may deplete dopamine and thus diminish inhibitory neural function, allowing earlier propagation of afterdischarges and augmenting drug induced stereotypies. 25 references. (Author abstract modified)

001495 Kinney, Lois; Vorhees, Charles V. Department of Psychology, University of Cincinnati, Cincinnati, OH 45221 **A comparison of methylphenidate induced active avoidance and water maze performance facilitation.** Pharmacology Biochemistry and Behavior. 10(3):437-439, 1979.

Methylphenidate facilitated both active avoidance behavior and water maze performance in male Sprague-Dawley rats. Repetitive errors on both tasks were greater in the drug group than in a nondrug control group and were positively correlated with water maze performance. These results fail to support the view that active avoidance behavior is more influenced by performance variables than is water maze acquisition. An unexpected enhancement of water maze performance was noted in control animals previously tested on active avoidance, compared with naive controls. This group also made fewer repetitive errors than naive controls, suggesting that previous shock exposure reduced inappropriate responses. 13 references. (Author abstract modified)

001496 Kiser, R. Sanford; Lebovitz, Robert M.; German, Dwight C. Department of Psychiatry, Southwestern Medical School, University of Texas Health Science Center, Dallas, TX 75235 **Anatomic and pharmacologic differences between two types of aversive midbrain stimulation.** Brain Research (Amsterdam). 155(2):331-342, 1978.

Anatomical and pharmacological differences between two types of aversive midbrain stimulation were investigated in male albino rats. Electrical stimulation of the dorsal central gray area (DCG) produced frantic, escape seeking behavior, whereas stimulation of the ventral reticular formation (VRF) produced a stereotyped circling response. Stimulation at both sites was aversive, in that animals would bar-press for escape in a decremental bar-pressing paradigm. Following the acquisition of stable baseline decremental bar-pressing performance, animals were given injection of the serotonin depleting drug, para-chlorophenylalanine (PCPA), or the catecholamine depleting drug, alpha-methyl-para-tyrosine (AMPT). Compared to saline controls, the PCAP injected, DCG stimulated animals showed a marked increase in decremental bar-pressing, whereas the VRF stimulated animals showed no change. AMPT injected VRF stimulated animals showed a marked decrease in decremental bar-pressing but the DCG stimulated animals were not affected. Results suggest that escape behavior from electrical stimulation of midbrain sites is mediated by more than one neural system. 67 references. (Author abstract modified)

001497 Kokkinidis, L.; Irwin, Jill; Anisman, H. Department of Psychology, University of Saskatchewan, Saskatoon, Saskatchewan, Canada **Shock-induced locomotor excitation following acute and chronic amphetamine treatment.** Neuropharmacology (Oxford). 18(1):13-22, 1979.

Footshock reduced normal locomotor activity in male Swiss-Webster mice, but potentiated the locomotor excitation produced by d-amphetamine. A competitive relationship was demonstrated between the temporal changes in amphetamine induced locomotor activity and stereotypy, but the occurrence of postschock excitation was independent of these behaviors. Reduction of norepinephrine (NE) and dopamine by pretreatment with alpha-methyl-para-tyrosine methylester antagonized the amphetamine effects on all three behaviors. In contrast, reduction of NE with the dopamine-beta-hydroxylas inhibitor FLA-63 had no effect on locomotor activity, increased stereotypy to a limited extent, and produced a small but significant decline in postshock excitation. The effects of chronic amphetamine administration on postshock excitation paralleled the effects produced by FLA-63 and appeared to be independent of changes in general locomotor activity and stereotypy following chronic exposure to the drug. 29 references. (Author abstract modified)

001498 Korner, Paul I.; Oliver, Judith R.; Reynoldson, James A.; Head, Geoffrey A.; Carson, Valerie J.; Walker, Mark McD. Baker Medical Research Institute, Commercial Road, Prahran, Victoria, Australia, 3181 **Cardiovascular and behavioral effects of intracisternal 6-hydroxydopamine in the rabbit.** European Journal of Pharmacology (Amsterdam). 53(1):83-93, 1978.

The acute effects of 6-hydroxydopamine (6-OHDA, 400-900mcg/kg, intracisternally) in rabbits consisted of bradycardia and hypertension, maximal 2-3 hours after injection and preceded in some cases by a phase of hypotension. After 600mcg/kg 6-OHDA, the peak rise in blood pressure (25mm Hg) was due to a rise in both hypertension and bradycardia. In pontine rabbits, 6-OHDA elicited a short latency fall in blood pressure resembling the hypotensive phase in intact animals. Chronic effects 7 days after 600mcg/kg 6-OHDA included rapid loss of 10% bodyweight, associated with a reduction in food and water intake. It is suggested that descending and ascending catecholaminergic pathways have inhibitory effects on blood pressure, although some of the pathways may also be excitatory. The absence of chronic circulatory changes suggests compensation through parallel pathways involving other transmitters. 43 references. (Author abstract modified)

001499 Kovacs, Gabor L.; De Wied, David. Institute of Pathophysiology, University Medical School, Szeged, Hungary **Effects of amphetamine and haloperidol on avoidance behavior and exploratory activity.** European Journal of Pharmacology (Amsterdam). 53(1):103-107, 1978.

The effects of d-amphetamine and haloperidol on retention of a one trial passive avoidance response, on extinction of pole jumping active avoidance behavior, and on open-field activity were investigated in male Wistar rats. When injected subcutaneously 1 hour prior to the retention test, low doses of amphetamine (10mcg) increased passive avoidance latency, but higher doses (20 and 1000mcg) caused a bimodal distribution of avoidance latencies. Haloperidol (0.03 or 1.0mcg) significantly attenuated passive avoidance behavior. Amphetamine (10, 30, or 90mcg) caused a dose dependent delay in extinction of pole jumping avoidance behavior. Haloperidol (0.03 or 0.1mcg) induced dose dependent facilitation of extinction. Open-field activity was not significantly affected by 30mcg amphetamine or 0.03mcg haloperidol; 90mcg amphetamine significantly increased rearing activity and 0.1mcg haloperidol decreased ambulation. Results indicate that passive and active avoidance behaviors are sensitive measures of the activity of psychostimulant and neuroleptic drugs, while exploratory behavior permits more specific behavioral effects to be dissociated from locomotor influences. 12 references. (Author abstract modified)

001500 Kratz, Constance M.; Levitsky, David A. Oberlin College, Department of Psychology, Oberlin, OH 44074 **Post-ingestive effects of quinine on intake of nutritive and non-nutritive substances.** Physiology & Behavior. 21(6):851-854, 1978.

Intragastric intubation of 0.75g quinine hydrochloride (QHCl) had no effect on 4 hour food intake in female Sprague-Dawley rats but produced anorexia over a 24 hour period when paired with consumption of a novel sucrose octa acetate (SOA) treated

chow. No anorexia developed when a familiar food was available. SOA adulteration alone produced a decrement in food intake that persisted for 4 hours; this effect was independent of QHCl intubation. In a second experiment, intubation of 0.375 or 0.75g QHCl, 0.6g SOA, or 0.3M lithium chloride (LiCl) did not alter chow intake, but QHCl and LiCl both produced pica that lasted for 4 hours. SOA and 0.75g QHCl produced a 24 hour hyperphagia, while LICl and 0.3759 GHCl produced no change in 24 hour chow intake. These results support the hypothesis that the anorexia and weight loss that arise when quinine is used as a dietary adulterant are due to the pharmacological effects of quinine rather than to its unpalatable taste. 11 references. (Author abstract modified)

001501 Ksir, Charles. University of Wyoming, Laramie, WY 82070 **Scopolamine does not reduce tonic immobility in chickens.** Physiological Psychology. 6(4):521-523, 1978.

The effects of scopolamine, a competitive inhibitor of acetylcholine receptors, on tonic immobility were examined in chickens given up to 1mg/kg or 2mg/kg scopolamine hydrobromide 15 min before testing. Animals given the lower dose did not show a reduced duration ot tonic immobility when a 15 sec restraint procedure was used to induce immobility. Animals given the larger dose failed to show decreased duration or probability of induction of tonic immobility compared to saline injected controls. Results contradict those previously reported by Thompson et al. (1974). Possible contamination of the Thompson et al. results by experimenter expectation is discussed. 6 references. (Author abstract modified)

001502 LaBella, F. S.; Havlicek, V.; Pinsky, C. Department of Pharmacology and Therapeutics, University of Manitoba, Winnepeg, Manitoba R3E OW3, Canada **Opiate-like excitatory effects of steroid sulfates and calcium-complexing agents given cerebroventricularly.** Brain Research (Amsterdam). 160(2):295-305, 1979.

Intracerebroventricular administration of 10-20mcg of steroid-O-sulfates induced hypermotility, agitation, salivation, EEG abnormalities, stereotypies, wet dog shakes, and seizures in male Sprague-Dawley rats. Equivalent effects resulted from 30-200mcg morphine sulfate, 50mcg thyleneglycol-bis (beta-aminoethyl ether)-N,N'-tetraacetic acid (EGTA), or 300-400mcg of sodium sulfate or phosphate but not chloride, nitrate, or acetate. Nonsteroid sulfates, steroid glucuronides, and steroid phospates were inactive. Naloxone, previously found to antagonize the excitatory effects of andosterone sulfate, failed to antagonize those of cortisol sulfate, sodium sulfate, or EGTA. These findings suggest a role for extracellular calcium ions and for sulfate derived from circulating steroids in central responses to opiates. 3 references. (Author abstract modified)

001503 Laguzzi, Raul F.; Adrien, Joelle; Bourgoin, Sylvie; Hamon, Michel. Departement de Physiologie, CHU Pitie Salpetriere, INSERM U3, Paris, France **Effects of intraventricular injection of 6-hydroxydopamine in the developing kitten. 1. On the sleepwaking cycles.** Brain Research (Amsterdam). 160(3):445-459, 1979.

Intraventricularly administered 6-hydroxydopamine (6-OHDA), with or without pretreatment with chlorimipramine, produced drastic reductions in endogenous monoamines in the forebrain of developing kittens and had differential effects on the sleep/waking cycle, depending on the age at time of injection. Sleep regulation was not disturbed in 1-2-week-old kittens by 6-OHDA alone or in combination with chlorimipramine. In 3-5-week-old kittens, however, 6-OHDA significantly decreased paradoxical sleep (PS), as it does in the adult animal. Results suggest that catecholaminergic systems play no significant role in sleep regulation in the early postnatal period in the kitten, but exert a regulatory influence on PS in the juvenile cat. The functional maturation of catecholaminergic mechanisms for sleep regulation appears to occur between the third and fifth week of postnatal life. 33 references. (Author abstract modified)

001504 Lal, Harbans; Spaulding, Theodore; Fielding, Stuart. Department of Pharmacology and Toxicology, University of Rhode Island, Kingston, RI 02881 **Swim-stress induced analgesia and lack of its naloxone antagonism.** Communications in Psychopharmacology. 2(3):263-266, 1978.

The nature of swim stress induced analgesia was studied in male hooded rats and Swiss albino male mice made to swim for 4 minutes before and after induction of pain responses. Tail flick latency in mice and tail withdrawal latency in rats were increased after swim stress. Phenyl benzoquinone writhings were also abolished by swim stress. Naloxone (10mg/kg) given before swim stress failed to antagonize the stress induced analgesia. 8 references. (Author abstract)

001505 Lau, Peter Pok. Carnegie-Mellon University **The involvement of brain biogenic amines in intermale aggressive behavior in mice: a pharmacological analysis. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. Mfilms, No. 7803455, HC$15. MF$7.50. 80 p. 1977.

The effects of several drugs affecting brain biogenic amines on intermale aggressive behaviors in mice were studied using a resident/intruder paradigm. The drugs included l-DOPA, l-5-HTP, and d-amphetamine. Results support a baseline drug interaction hypothesis for the effects of drugs on aggressive behavior. This hypothesis states that drug effects on intermale aggressive behavior can be predicted by the baseline and history of aggressive behavior of the injected animals. Drugs tend to suppress aggressive behavior if the animals are experienced attackers or they will display aggressive behavior due to isolation housing treatments. Possible alternative theories and explanations are discussed. (Journal abstract modified)

001506 Leibowitz, Sarah F.; Arcomano, Anthony; Hammer, Norman J. Rockefeller University, New York, NY 10021 **Tranylcypromine: stimulation of eating through alpha-adrenergic neuronal system in the paraventricular nucleus.** Life Sciences (Oxford). 23(7):749-758, 1978.

The stimulatory effect of tranylcypromine (TCP) injection upon eating in satiated rats was investigated. The effects of TCP, which is known to release endogenous norepinephrine (NE), on food consumption were examined at five dose levels in Sprague-Dawley rats maintained and tested on a platable milk/mash combination diet. Results indicate that TCP, eating in the rats positively correlates in magnitude with the effect of NE also injected into the paraventricular nucleus in the same animals. Local pretreatment with NE synthesis inhibitors blocked the TCP eating response but had no effect on eating elicited by exogenous NE. It is suggested that TCP, a monoamine oxidase inhibitor, stimulates eating through the release of endogenous NE from adrenergic neurons innervating the region of the paraventricular nucleus. 37 references. (Author abstract modified)

001507 Leibowitz, Sarah F.; Rossakis, C. Rockefeller University, 1230 York Avenue, New York, NY 10021 **Analysis of feeding suppression produced by perifornical hypothalamic injection of catecholamines, amphetamines and mazindol.** European Journal of Pharmacology (Amsterdam). 53(1):69-81, 1978.

The effects of perifornical hypothalamic injection of catecholamines (CA), amphetamines, and mazindol on feeding in hungry male Sprague-Dawley rats were examined. In pargyline pretreated rats, epinephrine (EPI, injected with an alpha-adreno-

ceptor blocker) and dopamine (DA) both significantly suppressed food intake at doses as low as 31ng for DA and 150ng for EPI. This effect was reliably strengthened by inhibiting CA deamination or presynaptic CA uptake. Perifornical injections of amphetamine, mazindol, methamphetamine, and phenmetrazine also suppressed feeding; the magnitude of this effect was positively correlated with the effect produced by CA agonists. The effect of mazindol was partially antagonized by perifornical injection of DA and beta-adrenoceptor blockers. The effects of amphetamine and EPI were abolished by these drugs, whereas the DA effect was selectively inhibited by the DA antagonist. Serotonergic antagonists produced no change. Results support the hypothesis that perifornical hypothalamic CA neurons, through dopaminergic receptors had beta-adrenoceptors, are involved in inhibiting feeding behavior, as well as in mediating the anorexic action of the amphetamines and mazindol. 47 references. (Author abstract modified)

001508 Lejeune, F.; Poignant, J. C. Dept. of Neuropsychopharmacology, Institut de Recherches Servier, 14, Rue du Val d'Or, F-92150 Suresnes, France **Influence of amineptine administrations on the rat EEG: a study by an automatic analysis method.** Arzneimittel Forschung (Aulendorf). 28(1):262-267, 1978.

The mechanism of action of amineptine on the sleep/wakefulness cycle in the rat was examined through the study of the automatic analysis of the EEG. The method, using neocortical, hippocampal, and electromyogram signal powers, allowed a classification of the nyctohemeral cycle in six states. The agent induced a global increase in the duration of active and inactive wakefulness states. At low doses the inactive wakefulness time was increased. For higher doses, the active wakefulness state was enhanced during the 1st hour following administrations. After initial changes, normal states of sleep reappeared. Next an increase in the paradoxical sleep time was observed. This change concerned the total duration of paradoxical sleep and not the number of episodes. It is concluded that the initial effects and late modifications in the paradoxical sleep time are unusual and cannot be explained by other pharmacological or biochemical available data. 16 references. (Author abstract modified)

001509 Lesher, Gary Allen. Purdue University **Potentiation of response to amphetamine and hexobarbital in the rat physically dependent on morphine. (Ph.D. dissertation).** Dissertation Abstracts International. An Arbor, MI, Univ. M-films, No. 77-30100, HC$15. MF$7.50. 130 p. 1977.

Responses to amphetamine and hexobarbitol in rats physically dependent on morphine were studied. Morphine dependence can produce an increased locomotor response to amphetamine in male rats, and this is acompanied by an increase in amphetamine concentration in the brain. This increase in amphetamine brain levels is not found in female morphine dependent rats. Morphine dependence may increase uptake by altering the active transport system or the passive diffusion system. An increased hexobarbital sleeping time was noted in male and female morphine dependent rats. This increase was accompanied by an increase in brain sensitivity as measured by the awakening brain level of hexobarbital and by the amount of hexobarbital required to produce a burst suppression of 1 second or more in EEG activity. The suggested mechanism for these changes in male rats is a combination of inhibition of metabolism and an additive effect of morphine and hexobarbital. In female rats, only the additive effect occurs. (Journal abstract modified)

001510 Lippa, Arnold S.; Klepner, Claire A., Yunger, Libby; Sano, Mary C.; Smith, William V.; Beer, Bernard. Central Nervous System Research Dept., Lederl Laboratories, Pearl River, NY 10965 **Relationship between benzodiazepine receptors and experimental anxiety in rats.** Pharmacology Biochemistry and Behavior. 9(6):853-856, 1978.

To further investigate the nature and function of 3H-diazepam binding sites, the relationship between benzodiazepine receptors and experimental anxiety in rats was studied. The in vitro and in vivo ability of benzodiazepines to inhibit specific 3H-diazepam binding correlated with their ability to increase punished responding in a conflict situation. Conflict and footshock, the punishing stimulus used in most conflict procedures, also altered 3H-diazepam binding. These data implicate 3H-diazepam binding sites in mediating at least some of the anxiolytic properties of benzodiazepines and suggest the existence of some endogenous substance which might be involved in the etiology of anxiety. 17 references. (Author abstract modified)

001511 Ljungberg, T.; Ungerstedt, U. Department of Histology, Karolinska Institutet, Stockholm, Sweden **Evidence that the different properties of haloperidol and clozapine are not explained by differences in anticholinergic potency.** Psychopharmacology (Berlin). 60(3):303-307, 1979.

The hypothesis that differences in anticholinergic potency underlie the differences between haloperidol and clozapine in the incidence of extrapyramidal side-effects (EPS) was tested in male Sprague-Dawley rats. After combined pretreatment with haloperidol and the anticholinergic drug scopolamine, apomorphine elicited a pattern of behavior characterized by sniffing and repetitive head and limb movements; the intensity of stereotypy increased with increasing doses of scopolamine. However, haloperidol and scopolamine did not elicit gnawing, which is characteristic of the behavior elicited by apomorphine after high doses of clozapine. These results support the idea that the different properties of haloperidol (high incidence of EPS) and clozapine (low incidence of EPS) cannot be explained by differences in anticholinergic potencies. 17 references. (Author abstract modified)

001512 Lorens, Stanley A.; Sainati, Stephen M. Department of Pharmacology, Stritch School of Medicine, Loyola University, 2160 South First Avenue (Bldg. 135), Maywood, IL 60153 **Naloxone blocks the excitatory effect of ethanol and chlordiazepoxide on lateral hypothalamic self-stimulation behavior.** Life Sciences (Oxford). 23(13):1359-1364, 1978.

The effect of naloxone upon the excitation of lateral hypothalamic self-stimulation (LH SS) induced by ethanol (ETOH) and chlordiazepoxide (CDP) in male albino rats was studied. Results indicate that ETOH and CDP enhance operant responding by rats for lateral LH SS. Naloxone does not affect LH SS or blood alcohol level, but prevents the increased responding for LH SS produced by ETOH and CDP. Therefore, ETOH and CDP, but not brain stimulation reward itself, may release an endogenous opioid whose action at opiate receptors result in an excitatory behavioral effect which can be blocked by naloxone. 21 references. (Author abstract modified)

001513 Marasco, Elizabeth; Cornwell-Jones, Catherine; Sobrian, Sonya K. Dept. of Psychology, Princeton University, Princeton, NJ 08540 **6-Hydroxydopamine reduces preference for conspecific but not other familiar odors in rat pups.** Pharmacology Biochemistry and Behavior. 10(3):319-323, 1979.

Sprague-Dawley rat pups injected subcutaneously with 6-hydroxydopamine (6-OHDA) showed reduced preference for a familiar combination of conspecific and botanical odors when tested in a two choice situation. However, the 6-OHDA treatment did not influence preference for the simple botanical odor. The drug treatment also reduced norepinephrine (NE) concentrations in the forebrain and olfactory bulbs, suggesting that NE

may be involved in the ontogeny of acquired responses to conspecific odors. 31 references. (Author abstract modified)

001514 Margules, David L.; Moisset, Beatriz; Lewis, Michael J.; Shibuya, Haruo; Pert, Candace B. Department of Psychology, Temple University, Philadelphia, PA 19122 **Beta-endorphin is associated with overeating in genetically obese mice (ob/ob) and rats (fa/fa).** Science. 202(4371):988-991, 1978.

The effects of very small doses of the opiate antagonist naloxone on the eating behavior of genetically obese mice (ob/ob) and rats (fa/fa) were studied. Small doses of naloxone selectively abolished overeating in genetically obese mice and rats without affecting the feeding behavior of lean littermates. Elevated concentrations of the naturally occurring opiate beta-endorphin were found in the pituitaries of both obese species and in the blood plasma of the obese rats. Brain levels of beta-endorphin and Leu-enkephalin were unchanged. The data suggest that excess pituitary beta-endorphin may play a role in the development of the overeating and obesity syndrome. 21 references. (Author abstract modified)

001515 Marsden, C. A. Department of Physiology and Pharmacology, Medical School, Queen's Medical Centre, Nottingham NG7 2UH, England **The involvement of 5-hydroxytryptamine and dopamine in the behavioural effects of alpha-methyltryptamine.** British Journal of Pharmacology (London). 64(3):431P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the involvement of 5-hydroxytryptamine (5HT) and dopamine (DA) in the behavioral effects of alpha-methyltryptamine (alpha-MT) is reported. Pretreatment with 150mg/kg p-chlorophenylalanine 24 hours before intraperitoneal administration of 10mg/kg alpha-MT reduced both behavioral score and activity in male Wistar rats. Methiothepin (25mg/kg, 30 minutes before alpha-MT) reduced the behavioral score and running activity during the second hour after injection. Methergoline (2mg/kg, 60 minutes before alpha-MT) reduced the behavior score but did not prevent running activity. Pimozide (0.3mg/kg, 30 minutes before alpha-MT) reduced running activity but did not alter behavioral score. Fluoxetine (10mg/kg) and chlorimipramine (12.5mg/kg) given 30 minutes before alpha-MT significantly reduced the behavior score. Fluoxetine did not prevent running activity but delayed its onset and reduced its intensity. Chlorimipramine significantly reduced the behavior score following administration of 5-methoxy-N,N-dimethyltryptamine. Results indicate that both 5HT and DA receptors are involved in the behavioral effects of alpha-MT; the initial behavioral syndrome may reflect uptake and release of 5HT, while the subsequent running activity appears to involve DA and 5HT receptors. 4 references. (Author abstract modified)

001516 Martin, Parthena; Consroe, Paul. Dept. of Pharmacology and Toxicology, College of Pharmacy, University of Arizona, Tucson, AZ 85721 **Tolerance to delta 9-tetrahydrocannabinol in adapted and nonadapted rabbits.** Pharmacology Biochemistry and Behavior. 9(6):753-758, 1978.

Tolerance to delta 9-tetrahydrocannabinol (delta 9-THC) in New Zealand white rabbits which had been adapted to the testing chamber was compared to that of Ss not adapted to the testing chamber. During vehicle control and on the first and last day of delta 9-THC administration, EEGs were recorded from the motor cortex and hippocampus, while standing, sprawling, and behavioral activity were recorded concurrently. Results show that tolerance to the behavioral and EEG effects of delta 9-THC occurs in rabbits and that acute and chronic effects produced by delta 9-THC are influenced by environmental factors. 14 references. (Author abstract modified)

001517 Martinez, Joe L., Jr.; Jensen, Robert A.; Vasquez, Beatriz J.; Lacob, Joe S.; McGaugh, James L.; Purdy, Ralph E. Department of Psychobiology, School of Biological Sciences, University of California, Irvine, CA 92717 **Acquisition deficits induced by sodium nitrite in rats and mice.** Psychopharmacology (Berlin). 60(3):221-228, 1979.

Graded doses of sodium nitrite were administered to male Sprague-Dawley rats and Swiss-Webster mice shortly before or immediately after a single training trial in an inhibitory avoidance task. A retention test was given 24 hours (rats) or 72 hours (mice) after training. Results indicate that sodium nitrite impairs acquisition of an inhibitory avoidance response in rats and mice. Retention was impaired with doses lower than those required to produce hypoxic effects, as measured by the EEG, methemoglobin levels in the blood, blood pressure, and heartrate. Since hypoxia was not involved, it is likely that the effects were mediated by some direct action of sodium nitrite on the CNS. 37 references. (Author abstract)

001518 Mason, S. T. Division of Neurological Sciences, Department of Psychiatry, University of British Columbia, Vancouver, B.C., V6T 1W5, Canada **Pilocarpine: noradrenergic mechanism of a cholinergic drug.** Neuropharmacology (Oxford). 17(12):1015-1021, 1978.

Pilocarpine, which is usually regarded as a cholinergic agonist, induced a state of catalepsy or tonic immobility in male Woodlyn rats. Depletion of forebrain noradrenaline using the selective neurotoxin 6-hydroxydopamine almost completely abolished the cataleptic action of the drug. Following higher doses of pilocarpine a rebound hyperactivity was seen after the initial catalepsy; this effect was also blocked by noradrenergic depletion. Results suggest that pilocarpine may stimulate cholinergic receptors located on noradrenergic neurons and that its action may be dependent on the integrity of these noradrenergic system. 46 references. (Author abstract modified)

001519 Mason, Stephen T.; Fibiger, Hans C. Division of Neurological Sciences, Department of Psychiatry, University of British Columbia, Vancouver, BC, Canada V6T 1W5 **Neurochemical basis of the dorsal bundle extinction effect.** Pharmacology Biochemistry and Behavior. 10(3):373-380, 1979.

A series of experiments in male Wistar rats demonstrated that the dorsal bundle extinction effect (DBEE) is due to loss of forebrain noradrenaline (NA) and not to nonspecific effects, damage to cell bodies at the injection site, or interference with other neurotransmitter systems. Injection of 6-hydroxydopamine (6-OHDA) at the level of the dorsal raphe or substantia nigra resulted in marked resistance to extinction on continuously reinforced schedules, suggesting that the common element between these two placements, the dorsal noradrenergic bundle, is the substrate for the resistance to extinction. These injections caused severe depletion of forebrain NA, with no change in dopamine, serotonin, acetylcholine, or gamma-aminobutyric acid related parameters in any brain area studied. The DBEE was reversed following pretreatment with the NA uptake inhibitor desimipramine (25mg/kg) 30 minutes prior to intracerebral injection of 6-OHDA. Injections of kainic acid or 5,7-dihydroxytryptamine failed to induce resistance to extinction, indicating that cell body loss at the injection site or damage to serotonergic systems are not involved in the DBEE. 35 references. (Author abstract modified)

001520 Matte, Alexander C. Department of Neurology, University Hospital Eppendorf, D-2000 Hamburg 20, Germany **A method of quantitating aggressive behaviour revealing possible dissociation of motor activity and aggression.** Psychopharmacology (Berlin). 60(3):247-251, 1979.

A method of quantitating isolation induced aggression in wild male mice by measuring coarse motor activity is described. The method is based on the operational definition of aggression as a form of motor activity in which two or more animals are involved in behavior patterns such as physical attack and defense, including pursuit and flight. Both coarse and fine motor activity were measured by means of an electromagnetic activity meter. In mice treated with various hormones, neurotransmitter antagonists, hashish, and cyproterone, 492 flights were recorded and a significant positive correlation between indices of fighting behavior and coarse motor activity were found. The simultaneous measurement of motor activity and aggression revealed dissociated effects of some drugs on nonaggresive fine motor activity and aggression. 47 references. (Author abstract modified)

001521 Mello, Nancy K.; Mendelson, Jack H. Alcohol and Drug Abuse Research Center, Harvard Medical School, McLean Hospital, Belmont, MA **Effects of the neuropeptide DG-AVP on morphine and food self-administration by dependent rhesus monkeys.** Pharmacology Biochemistry and Behavior. 10(3):415-419, 1979.

Pretreatment with the neuropeptide desglycinamide9-arginine8-vasopressin (DG-AVP, 25 or 125mcg/kg) did not reduce intravenous morphine self-administration (0.25mg/kg/injection) in morphine dependent, male rhesus monkeys, compared to pretreatment with saline or vehicle placebo. Food self-administration was also unaffected by DG-AVP pretreatment. These results do not confirm previous reports of a dose dependent suppression of heroin self-administration in rats following DG-AVP pretreatment. 14 references. (Author abstract modified)

001522 Menon, M. K.; Clark, W. G. Psychopharmacology Research Laboratory, Veterans Administration Hospital, Sepulveda, CA 91343 **Pharmacological evidence for the involvement of GABA-ergic system in the locomotor stimulation produced in mice by 1,3-dimethyl-5-aminoadamantane (D-145).** Neuropharmacology (Oxford). 17(12):1049-1052, 1978.

The effects of aminooxyacetic acid (A0AA) and lioresal, a gamma-aminobutyric acid (GABA) agonist, on the locomotor stimulant effects of d-amphetamine and 1,3-dimethyl-5-aminoadamantane (D-145) in male Swiss mice were investigated. Pimozide more effectively blocked the locomotor stimulant effects of d-amphetamine than those of D-145. Reserpine blocked the D-145 induced stimulation, but did not modify the d-amphetamine induced stimulation; alpha-methyl-p-tyrosine had effects opposite to those of reserpine. Phenoxybenzamine did not significantly alter the response to either stimulant. Pretreatment with A0AA or lioresal prevented the locomotor stimulation induced by D-145 but not that induced by d-amphetamine. Results suggest that d-amphetamine and D-145 preferentially stimulate the dopaminergic areas of the brain and that D-145 acts by releasing granular stores of dopamine D-145 appears to act as a GABA antagonist; removal of the inhibitory influence of the GABA system on dopaminergic pathways by D-145 results in activation of the latter, leading to locomotor stimulation. The d-amphetamine induced stimulation does not involve the GABA system. 25 references. (Author abstract modified)

001523 Mereu, G. P.; Scarnati, E.; Paglietti, E.; Quarantotti, B. Pellegrini; Chessa, P.; Di Chiara, G.; Gessa, G. L. Institute of Pharmacology, University of Cagliari, Cagliari, Italy **Sleep induced by low doses of apomorphine in rats.** Electroencephalography and Clinical Neurophysiology (Amsterdam). 46(2):214-219, 1979.

The effect of apomorphine on the EEG of freely moving rats was studied. Apomorphine at the dose of 1mg/kg caused stereotypy and a marked reduction of total sleep. On the contrary, acute subcutaneous administration of apomorphine at the dose of 100mcg/kg or less markedly increased the amount of total sleep (corresponding mostly to synchronized sleep). Moreover, the infusion of apomorphine (80mcg/kg/h) for 4 hours doubled the duration of slow and REM sleep. The hypnotic effect of apomorphine was prevented by neuroleptics, such as pimozide, benzperiodol and L-sulpiride, at doses which, per se, did not modify the EEG of the animals. Results suggest the existence in the CNS of dopamine receptors mediating sleep. 17 references. (Author abstract)

001524 Michaelson, I. A.; Rafales, L. S.; Bornschein, R. L.; Loch, R. K. Department of Environmental Health, Division of Toxicology, University of Cincinnati College of Medicine, Cincinnati, OH **Lead and hyperactivity in animals.** Psychopharmacology Bulletin. 14(3):48-50, 1978.

In a summary of a paper delivered at the 16th Annual Meeting of the American College of Neuropsychopharmacology, in San Juan, December 14-16, 1977, the effects of growth retardation on spontaneous locomotor activity and on activity in response to the stimulant d-amphetamine were described. Mice were suckled in litters of 8 or 16 in order to produce variant growth rates. Upon administration of d-amphetamine, growth retarded mice (large litter) increased their overall activity less than did normal size mice, and the rate of decline in increased activity was also more rapid in growth retarded mice. Data suggest that the variable of growth rate had been inadequately controlled on previous studies of hyperactivity and paradoxical response to stimulants in lead exposed mice, and indicate that aged matched controls are not sufficient. It was concluded that hyperactivity and attenuated response to stimulant drugs in lead exposed mice may be partially attributed to or confounded by the presence of neonatal growth retardation. 6 references.

001525 Miczek, Klaus A. Department of Psychology, Carnegie-Mellon University, Pittsburgh, PA 15213 **Delta 9-terahydrocannabinol: antiaggressive effects in mice, rats, and squirrel monkeys.** Science. 199(4336):1459-1461, 1978.

The effects of delta 9-tetrahydrocannabinol (THC) on aggressive behavior in mice, rats, and squirrel monkeys were investigated. THC, the most active constituent of marihuana, decreased species specific attack behavior in mice, rats, and squirrel monkeys at doses (0.25-2.0mg/kg) that had no effects on other elements of the behavior repertoire. Aggressive behavior was engendered in all three species by confronting a resident animal with an intruder conspecific. The present results contrast with the widely held belief that marihuana increases aggressive behavior. 13 references. (Author abstract modified)

001526 Miczek, Klaus A. Department of Psychology, Carnegie-Mellon University, Pittsburgh, PA 15213 **A new test for aggression in rats without aversive stimulation: differential effects of d-amphetamine and cocaine.** Psychopharmacology (Berlin). 60(3):253-259, 1979.

The effects of cocaine and d-amphetamine were studied in a procedure that reliably engenders agonistic behavioral between resident and intruder male Long-Evans hooded rats. Administration of d-amphetamine at a very low dose (0.063mg/kg) to resident males increased the frequency of their attacks, sideways threats, and pursuits; low doses of cocaine (0.5and 2.0mg/kg) failed to significantly alter these behaviors. Attack and threat behavior were effectively decreased by 0.25-1.0mg/kg d-amphetamine and by 8 and 32mg/kg cocaine. The antiaggressive effects of amphetamine, but not cocaine, were accompanied by a marked increase in nonagonistic rearing and walking. Amphetamine administration to intruder rats produced an increase in nonagonistic locomotor activity and caused the intruders to be

attacked more frequently, to escape more often, and to emit fewer ultrasonic vocalizations. Cocaine did not significantly alter the intruder's behavior. It is concluded that the resident/intruder model is a reliable procedure for detecting differential behavioral effects of psychomotor stimulants; this method avoids the confounding influence of aversive stimulation, conditioning, and screening typically associated with aggression tests in the laboratory. 33 references. (Author abstract modified)

001527 Milar, Katharine Stephens. Indiana University **Signal detection: a method for characterization of drug effects in rats. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7730306, HC$15. MF$7.50. 77 p. 1977.

The use of signal detection analysis for the characterization of the performance of four groups of rats on a discrete trial brightness description task is described. A ""hit" was defined as a response in the presence of the positive stimulus and ""correct rejection" was defined as a failure to respond in the presence of the negative stimulus. One group was reinforced only for hits and each of the other groups received a different probability of reinforcement for both hits and correct reinforcement rejections. Reinforcement frequency was equated for all four groups. The different reinforcement conditions produced between group differences in subjects' decision criteria but did not affect their discriminative ability. Subjects were dosed with scopolamine, amphetamine, and physostigmine. When the stimuli were highly discriminable, there was a significant increase in bias with amphetamine and a significant decrease in bias with physostigmine. When stimuli were less discriminable, the sensitivity of subjects was decreased and no drug induced bias shifts were observed. There were no differential drug effects for different reinforcement contingencies. The drug results suggest that signal detection analysis can be similarly applied to the characterization of drug effects. (Journal abstract modified)

001528 Moerschbaecher, Joseph M.; Boren, John J.; Schrot, John; Fontes, Jose Carlos Simoes. Department of Pharmacology, Georgetown University Schools of Medicine and Dentistry, 3900 Reservoir Road, Washington, DC 20007 **Effects of cocaine and d-amphetamine on the repeated acquisition and performance of conditional discriminations.** Journal of the Experimental Analysis of Behavior. 31(1):127-140, 1979.

The acute and chronic effects of cocaine and d-amphetamine on food reinforced behavior were investigated in pigeons responding on a two component multiple schedule. In comparison to control sessions, both acute cocaine and d-amphetamine increased errors in each component of the multiple schedule. Responding in the learning component was generally disrupted at lower doses than those that affected responding in the performance component. Pausing engendered by d-amphetamine was approximately twice as long as that under cocaine. Upon chronic administration, both the pausing and error increasing effects of each drug diminished. It is concluded that conditions of stimulus control may modulate the behavioral effects of drugs. 21 references. (Author abstract modified)

001529 Moja, Egidio A.; Stoff, David M.; Gillin, J. Christian; Wyatt, Richard Jed. Laboratory of Clinical Psychopharmacology, Division of Special Mental Health Research, Saint Elizabeths Hospital, Washington, DC 20037 **Neuroleptics attentuate stereotyped behavior induced by betaphenylethylamine in rats.** Biological Psychiatry. 13(2):191-295, 1978.

Effect of neuroleptics on stereotyped behavior induced by beta- phenylethylamine (PEA) was studied in pargyline pretreated male Sprague-Dawley beta-phenylethylamine induces stereotyped activity consisting of continuous head movements and sniffing associated with increased motor activity. All the neuroleptics (haloperidol, chlorpromazine, pimozide, clozapine) significantly reduce stereotypy and hypermotility in a dose response relationship. Diazepam has no significant effect on either stereotypy or hypermotility. In blocking stereotyped behavior, haloperidol (on a mg/kg basis) appeared to be slightly more powerful than pimozide, about 50 times more powerful than clozapine. The data indicates that the order of potency of neuroleptic blockade of beta-phenylethylamine induced stereotyped behavior is directly proportional to their ability to block dopamine receptors. 13 references.

001530 Moroni, F.; Cheney, D. L.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **The turnover rate of acetylcholine in brain nuclei of rats injected intraventricularly and intraseptally with alpha and beta-endorphin.** Neuropharmacology (Oxford). 17(3):191-196, 1978.

The effects of intraventricular injection of alpha-endorphin, beta-endorphin, and morphine were studied on the tail flick test, catalepsy, and acetylcholine (Ach) turnover in selected rat brain nuclei. Beta-endorphin induced analgesia and catalepsy as well as a dose dependent decrease in Ach turnover rates in the cortex, hippocampus, nucleus accumbens, and globus pallidus. No change was observed in the nucleus caudatus. These effects are qualitatively similar to those induced by intraventricular injection of morphine, which was approximately 100 times less active. Alpha-endorphin at a dose 30 times higher than the minimal effective dose of beta-endorphin was completely inactive. None of the above cited drugs modified Ach or choline content. Pretreatment with naltrexone completely antagonized all the effects induced by beta-endorphine or morphine. Intraseptal administration of beta-endorphin and morphine selectively decreased Ach turnover rate in the hippocampus without causing analgesia, thus supporting the idea that opiate receptors and their endogenous ligands regulate neuronal activity which is unrelated to analgesia. Studies suggest that not all brain cholinergic neurons are regulated by opiate receptors and also that opioid peptides are inhibitory neuromodulators. 41 references. (Author abstract modified)

001531 Mucha, R. F.; Kalant, H.; Linseman, M. A. Dept. of Pharmacology, University of Toronto, Toronto, Canada **Quantitative relationships among measures of morphine tolerance and physical dependence in the rat.** Pharmacology Biochemistry and Behavior. 10(3):397-405, 1979.

The relation between opiate tolerance and physical dependence was investigated in male Sprague-Dawley rats given ip injections of morphine sulfate (0, 7.5, 15, 25, or 45mg/kg/day for 34 days). Dose related effects on tailflick latency, swimming test, and body weight gain revealed the development of tolerance. Hyperthermia was also observed, but this effect was not dose related. The relation between the treatment dose and the magnitude of the various measures indicated that the development of analgesic tolerance to morphine paralleled some, but not all, signs of physical dependence. 27 references. (Author abstract modified)

001532 Mumford, L.; Teixeira, A. R.; Kumar, R. Institute of Psychiatry, de Crespigny Park, London SE5, England **Resistance of morphine-seeking behaviour in rats to pharmacological and behavioural "treatments."** Nature (London). 272(5649):167-168, 1978.

The effects of opioid replacement, antagonistic blockade, or behavioral aversion therapies on the oral self-administration of morphine solutions (morphine hydrochloride, 0.5mg/ml) were examined in male hooded rats trained to prefer morphine to

water. Rats treated by replacement therapy were injected with increasing doses of morphine 2 hours before each daily choice trial; consumption of morphine fell from 65% to 43% of total daily fluids during the first 4 days of medication, but increasing the dose of morphine had no further selective effect on morphine consumption when total fluid intake was reduced by 16%. Rats treated by blockade of opiate receptors with naloxone (up to 8mg/kg) showed no initial increase in morphine consumption and no extinction of morphine preference. Rats subjected to behavioral aversion procedures (pairing of novel tasting morphine solutions with naloxone precipitated abstinence from morphine) rejected novel tasting morphine solutions, but readily relapsed to morphine drinking when given morphine/water choice trials. Results demonstrate the importance of conditioned reinforcers and learned tendencies in morphine seeking behavior. 16 references.

001533 Nakamura, Mitsutaka; Fukushima, Hideaki. Research and Development Center, Pharmaceuticals Division, Sumitomo Chemical Co., Ltd., 4-2-1, Takatsukasa, Takarazuka, Hyogo, 665, Japan **Effects of reserpine, para-chlorophenylalanine, 5-6-dihydroxytryptamine and fludiazepam on the head twitches induced by 5-hydroxytryptamine or 5-methoxytryptamine in mice.** Journal of Pharmacy and Pharmacology (London). 30(4):254-256, 1978.

A comparison is presented of the effect of pretreatment with reserpine or p-chlorophenylalanine (pCPA) on the head twitches induced by 5-hydroxytryptamine (5-HT) (i.c.)or 5-methoxytryptamine (5-MT) (i.v.)in 10 male dd strain mice with that of 5,6-dihydroxytryptamine (5,6-DHT) and fludiazepam, one of the benzodiazepines which are known to cause an increase in 5-HT receptor activity. Reserpine caused a decrease in the concentration of brain 5-HT and head twitches induced by 5-HT were potentiated by pretreatment with reserpine. pCPA depleted the concentration of brain 5-HT and the number of head twitches induced by 5-MT was increased by pretreatment with pCPA. 5,6-DHT produced a relatively selective chemical lesion of 5-HT nerve terminals and decreased the concentration of 5-HT; the injection of 5-MT to mice pretreated with 5,6-DHT caused a significant increase in the number of head twitches. Fludiazepam increased the number of head twitches induced by 5-MT, but did not change the concentration of brain 5-HT at a dose which significantly potentiated the head twitches induced by 5-MT. It is suggested that reserpine, pCPA and 5,6-DHT deplete presynaptic 5-HT concentration and result in increased 5-HT receptor activity, whereas fludiazepam increases 5-HT receptor activity without affecting the concentration of brain 5-HT. 17 references.

001534 Nakamura, S.; Engel, J.; Goldstein, M. Neurochemistry Laboratories, Department of Psychiatry, New York University Medical Center, New York, NY 10016 **Blockade of lergotrile or apomorphine induced turning behavior by haloperidol and clozapine.** Communications in Psychopharmacology. 2(3):185-190, 1978.

The effects of oral administration of haloperidol and clozapine on the lergotrile induced turning behavior were investigated in rats with unilateral 6-hydroxydopamine lesions at the level of the medial forebrain bundle. Haloperidol or clozapine decreased the turning behavior by apomorphine or lergotrile, but these two neuroleptics have different potencies and duration of action in this animal model. Clozapine is less effective than haloperidol in decreasing the turning induced by lergotrile or apomorphine, and has a dual effect on the apomorphine induced turning behavior. At low doses it enhances the duration of the turning, while at high doses it decreases the turning behavior. The results do not support the previously reported conclusion based upon data obtained from the turning model that lergotrile and apomorphine interact with different populations of dopamine receptors. 5 references. (Author abstract)

001535 Nedelec, Lucien; Dumont, Claude; Oberlander, Claude; Frechet, Daniel; Laurent, Jacques; Boissier, Jacques R. Centre de Recherches Roussel-Uclaf, 102, route de Noisy, F-93230 Romainville, France **/Synthesis and dopaminergic activity of di(phenethyl)amine derivatives./** Synthese et etude de l'activite dopaminergique de derives de la di (phenethyl) amine. European Journal of Medicinal Chemistry (Paris). 13(6):553-563, 1978.

New derivatives of N-phenethyl dopamine and N-phenethyl m-tyramines and p-tyramines were synthesized and tested for their dopamine agonist activity. As in previous results, N-ethyl or N-propyl substituted derivatives were best in eliciting rotations in unilaterally 60HDA nigrostriatal lesioned rats and emesis in dogs or pigeons following parenteral administration. Monohydroxylated derivatives were as efficient as the corresponding dihydroxylated derivatives in the rotating behavior test. N-propyl N-phenethyl m-tyramine 45 (RU 24213) and its hydroxylated derivative 51 (RU 24926) were active at doses close to that of apomorphine and exhibited a longer duration of action. While the most potent dihydroxylated compounds parenterally were inactive or only slightly active orally, the corresponding monohydroxylated derivatives were also very potent orally in producing rotating behavior. It is concluded that compounds with a dissociation of activity could possibly have useful applications in the treatment of Parkinson's disease. 52 references. (Author abstract modified)

001536 Nelson, Linda R.; Ellison, Gaylord. Dept. of Psychology, University of California at Los Angeles, 405 Hilgard Avenue, Los Angeles, CA 90024 **Enhanced stereotypies after repeated injections but not continuous amphetamines.** Neuropharmacology (Oxford). 17(12):1081-1084, 1978.

The behavioral effects of d-amphetamine and apomorphine were investigated in male Long-Evans rats following continuous or repeated injection of d-amphetamine. Rats given repeated daily injections of d-amphetamine showed enhanced motor stereotypies when challenged with amphetamine or apomorphine. In contrast, rats given the same amount of d-amphetamine in a continuous regime using silicone pellets were hyperactive when tested with amphetamine and subsensitive to apomorphine. The implications of these findings for the dopamine theory of schizophrenia are discussed. 7 references. (Author abstract modified)

001537 Newton, Joseph E. O.; Dykman, Roscoe A.; Chapin, John L. 598, 151 NLR, Veterans Administration, North Little Rock Hospital Division, North Little Rock, AR 72114 **The prediction of abnormal behavior from autonomic indices in dogs.** Journal of Nervous and Mental Disease. 166(9):635-641, 1978.

Autonomic and behavioral measures are described which discriminate between two strains of pointer dogs developed through inbreeding and selection such that one strain displays marked timidity, excessive startle, and catatonic like immobility and one strain displays normal behavior. Discriminant analyses of behavioral measures, autonomic measures, and combined behavioral and autonomic measures from 20 abnormal and 19 normal dogs are described. Resting heartrate as well as heartrate and electrocardiographic changes due to an intravenously administered parasympathetic blocking agent (atropine) and a sympathetic stimulant (isoproterenol) were studied. Possible brain mechanisms underlying the behavior of the abnormal strain are discussed. 21 references. (Author abstract modified)

001538 Ng, L. K. Y.; Thoa, N. B.; Douthitt, T. C.; Albert, C. A. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Experimental ""auricular electroacupuncture" in morphine-dependent rats: behavioral and biochemical observations.** In: Den-

iker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 281-287).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, an animal model for auricular electroacupuncture (AEA) was described. In male Sprague-Dawley rats, application of strong pressure to the area of the cochlea and the ear roots induced a state of behavioral inhibition that could be maintained for long periods of time by the application of a rhythmic low intensity, low frequency stimulus. This model was used to test the effects of AEA on the withdrawal syndrome in morphine addicted rats. Results indicate that AEA can produce significant attenuation of certain morphine abstinent signs precipitated by naloxone. 27 references.

001539 Owen, Brenda E.; Taberner, P. V. Department of Pharmacology, University of Bristol Medical School, University Walk, Bristol BS8 1TD, England **Studies on the interaction between chloral hydrate and ethanol.** British Journal of Pharmacology (London). 64(3):400P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, a study of the interaction between chloral hydrate (CH) and ethanol in mice is reported. In vitro CH was reduced in the presence of mouse liver alcohol dehydrogenase (LAdH) and reduced nicotinamide adenine dinucleotide and competitively inhibited the oxidation of ethanol in the presence of nicotinamide adenine dinucleotide. Pyrazole potentiated the effects of both CH an trichlorethanol (TCE) in vitro, reducing the latency of action of CH and increasing the latency of TCE. In vivo, 2g/kg intraperitoneal ethanol or 200mg/kg intraperitoneal CH produced loss of righting reflex lasting from 5-16 minutes; when given together, a marked synergism was observed, with righting reflex lost for a mean of 78.5minutes. CH and ethanol did not appear to affect brain concentrations of each other, however. Ethanol appeared to stimulate the reduction of CH to TCE; since TCE is more potent as a hyponotic than CH, the observed behavioral synergism may be due to raised blood and brain levels of TCE. 6 references. (Author abstract modified)

001540 Panksepp, Jaak; Vilberg, Tom; Bean, N. Jay; Coy, David H.; Kastin, Abba J. Department of Psychology, Bowling Green State University, Bowling Green, OH 43403 **Reduction of distress vocalization in chicks by opiate-like peptides.** Brain Research Bulletin. 3(6):663-667, 1978.

When injected into the vicinity of the fourth ventricle in doses as low as 100 picomoles, methionine-enkephalin, D-A1a2-Met-enkephalinamide, beta-endorphin, D-A1a2-beta-endorphin, D-A1a2-alpha-endorphin, and D-A1a2-gamma-endorphin were each capable of reducing distress vocalizations (DV's) in socially isolated White Leghorn chicks. All of these substances were at least as potent as equimolar doses of morphine sulfate. In general, DV's were a more sensitive measure of opiate like peptide effects than reduction in body temperature. In a more limited study using peripheral injections, D-A1a2-Met-enkephalin (400nanomoles/kg) was more effected in reducing DV's than an equimolar dose of beta-endorphin. Beta-endorphin was not as effective via a peripheral route as it was when administered centrally. 15 references. (Author abstract modified)

001541 Pappas, Conrad Thomas Ernest. University of California, Berkeley **Structural effects of neonatal ovariectomy and replacement therapy on the cerebral cortex of rats living in differential environments. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7812724, HC$15. MF$7.50. 126 p. 1977.

The influence of gonadal hormones on the female cerebral cortex was examined in adult female Long-Evans rats, focusing on structural effects of neonatal ovariectomy and replacement therapy on the cerebral cortex of Ss living in differential environments. It was found that ovariectomized Ss, in comparison with intact controls, had a decrease in cortical thickness in area SeB following ethinylestradiol injections, while ovariectomized rats and rats given progesterone increased in cortical thickness. In ovariectomized Ss, cortical neuron cell body dimension increased in comparison to intact littermates, suggesting the possible involvement of specific ovarian hormones or of changes in protein uptake. Effects of ovariectomy were more prominent in environmentally impoverished Ss than in enriched Ss. Results support previous research and provide further evidence of significant anatomical changes in the cortex due to hormonal influences and external environments. (Journal abstract modified)

001542 Pettijohn, Terry F. Department of Psychology, Ohio State University, Marion, OH 43302 **Effects of alcohol and caffeine on wheel running activity in the Mongolian gerbil.** Pharmacology Biochemistry and Behavior. 10(3):339-341, 1979.

The effects of alcohol (0.8, 1.6, and 2.4g/kg) and caffeine (5, 10, 15, and 20mg/kg) on wheel running activity were investigated in 180 adult Mongolian gerbils. The animals were tested in two 10 minute activity trials, 48 hours apart, and the drugs were injected ip 30 minutes prior to the second trial. Low doses of alcohol or caffeine increased wheel running, whereas higher doses of either drug decreased the activity in gerbils of both sexes. 15 references. (Author abstract modified)

001543 Poignant, J. C.; Avril, A. Dept. of Neuropsychopharmacology, Institut de Recherches Servier, 14, Rue du Val d'Or, F-92150 Suresnes, France **Pharmacological studies on drugs acting on the social behaviour of the squirrel monkey: effects of amineptine, piribedil, d-amphetamine, and amitriptyline.** Arzneimittel Forschung (Aulendorf). 28(1):267-271, 1978.

The effects of amineptine, piribedil, d-amphetamine, and amitriptyline on the social behavior of the squirrel monkey were examined. The drugs were administered orally to one or two animals of the experimental group, considering the social rank of the subject or the group size. Modifications in social and individual behaviors in case of amphetamine or amitriptyline treatments were in agreement with past studies and had complex effects depending on the social hierarchy or the dominance behavior and caused modifications in the social dynamical behavior. The substance stimulated the dominant animal and induced a decrease in the orientation index of the social dynamical behavior of the submissive monkey. Amineptine simultaneously enhanced individual and social dynamical behaviors. It is concluded that the method of using the social behavior of squirrel monkeys is an effective approach to the detection and analysis of effects induced by substances acting on the CNS. 22 references. (Author abstract modified)

001544 Pointis, D.; Borenstein, P. Lab. de Psychopharmacologie Neurophysiologique, Ecole Pratique des Hautes Etudes, 54, Avenue de la Republique, F-94800 Villejuif, France **Effects of thioproperazine and sulpiride on the locomotor rhythms in the decorticate cat.** Psychopharmacology (Berlin). 60(3):271-276, 1979.

The effects of the neuroleptics thioproperazine (TZ) and sulpiride (S) on locomotor rhythms in the decorticate cat were investigated. Intravenous administration of TZ (0.5mg/kg) suppressed all locomotor rhythms, but S induced unclear effects. Local injection into the lateral/posterior hypothalamus of TZ (70mcg) suppressed rhythms, while S (350mcg) increased or induced them. Local injection into the lumbar spinal cord of TZ

(50mcg) abolished rhythms, and S (350mcg) reduced the amplitude but increased the duration of locomotor sequences. The flexion reflex was not affected by these drugs. Results suggest that the two drugs act at the spinal and hypothalamic levels. 25 references. (Author abstract modified)

001545 Poshivalov, V. P. Kafedra farmakologii, I Leningradskiy meditsinskiy institut imeni I. P. Pavlova, Leningrad, USSR / **Ethological analysis of the action exerted by medazepam and diazepam on the zoosocial behavior of isolated mice./** Etologicheskiy analiz deystviya medazepama i diazepama na zoosotsial'noye povedeniye izolirovannykh myshey. Farmakologiya i Toksikologiya (Moskva). 41(3):262-266, 1978.

The individual and social behavior modifications induced in mice by the action of two tranquilizers of the benzo-diazepine group were studied. Forty white mice were isolated in small cages for 6 weeks before the experiment. Limited social contact was then allowed and measurements were made of manifestations of fear and of aggressiveness in each of the mice. After isolation, the majority of mice showed behavior changes in social situations. In some, this change was manifested in an increase in aggressive activity, though of an impulsive and inconsistent character. In others, there was a tendency to spontaneous avoidance of social contact, combined with fearful movements. Treatment with diazepam and medazepam was found to increase the sociability of the fearful mice. On aggressive mice the drugs had a biphasic effect, small doses facilitating aggression and large doses suppressing it. 12 references. (Journal abstract modified)

001546 Pottoff, Peter; Valentino, Dominic; Lal, Harbans. Department of Psychology, University of Rhode Island, Kingston, RI 02881 **Attenuation of morphine analgesia by lesions of the preoptic forebrain region in the rat.** Life Sciences (Oxford). 24(5):421-423, 1979.

The role of the preoptic region in morphine analgesia was examined by comparing morphine action in intact and lesioned female Sprague-Dawley rats. Latency to tail withdrawal from hot water was measured before and after morphine injection. Morphine increased with withdrawal latency in intact and lesioned animals, but lesion of the preoptic forebrain region attenuated morphine analgesia. 20 references. (Author abstract modified)

001547 Prozialeck, Walter C.; Vogel, Wolfgang H. Department of Pharmacology, Thomas Jefferson University, 1020 Locust Street, Philadelphia, PA 19107 **MAO inhibition and the effects of centrally administered LSD, serotonin, and 5-methoxytryptamine on the conditioned avoidance response in rats.** Psychopharmacology (Berlin). 60(3):309-310, 1979.

Intraperitoneal pretreatment with the monoamine oxidase (MAO) inhibitors iproniazid, clorgyline, or deprenyl abolished the disruptive effects of intraventricular lysergic acid diethylamide (LSD) on the conditioned avoidance response (CAR) in male Wistar rats, but potentiated the disruptive effects of serotonin (5-HT) and 5-methoxytryptamine (5-MT) on the CAR. MAO inhibition did not affect brain levels of LSD, but significantly elevated brain levels of 5-HT and 5-MT. It is suggested that the decreased behavioral response to LSD is the result of changes induced by MAO inhibition, whereas the increased response to 5-HT and 5-MT results from increased brain levels of these compounds. 8 references. (Author abstract modified)

001548 Pycock, C.; Milson, J.; Tarsy, D; Marsden, C. D. Department of Pharmacology, Medical School, University of Bristol, Bristol BS8 1TD, England **The effect of manipulation of cholinergic mechanisms on turning behaviour in mice with unilateral destruction of the nigro-neostriatal dopaminergic system.** Neuropharmacology (Oxford). 17(3):175-183, 1978.

The effect of systemically administered centrally acting cholinergic and anticholinergic drugs on apomorphine and amphetamine induced circling behavior was investigated in mice with unilateral 6-hydroxydopamine lesions of nigro-neostriatal dopamine terminals. Scopolamine and benztropine both caused circling toward the side of the lesion when administered alone, and also significantly potentiated amphetamine induced ipsiversive circling but had no effect on apomorphine induced contraversive turning. Physostigmine, arecoline, and pilocarpine produced no circling behavior when given alone, but depressed circling rates induced by both amphetamine and apomorphine. Methylscopolamine and neostigmine neither produced any motor effects by themselves nor modified apomorphine or amphetamine induced turning. Methylscopolamine also had no effect on the inhibition of drug induced responses by physostigmine. Pretreatment of lesioned mice with alpha-methyl-p-tyrosine or haloperidol abolished circling response induced by amphetamine or scopolamine. The possible mechanisms and sites of interaction of the cholinergic and anticholinergic drugs with the nigro-neostriatal pathway are discussed. 38 references. (Author abstract modified)

001549 Quarantotti, Pellegrini; Corda, M. G.; Paglietti, E.; Biggio, G.; Gessa, G. L. Institute of Pharmacology, University of Cagliari, and Tecnofarmaci S.p.A., Pomezia, Rome, Italy **Inhibition of copulatory behavior in male rats by D-Ala2-met-enkephalinamide.** Life Sciences (Oxford). 23(7):673-378, 1978.

D-Ala2-Met-Enkephalinamide (DALA), a synthetic analog of met-enkephaline resistant to enzymatic degradation, was injected intraventricularly to sexually experienced male rats paired with receptive females in order to clarify the role of opiate receptors in the regulation of sexual behavior. A dose of DALA of 6mcg, which did not influence spontaneous motor activity, completely suppressed the copulatory behavior of all animals tested. A dose of 3mcg significantly increased mounting and intromission latencies, but did not influence other measures of the copulatory behavior. The effect of DALA was prevented by naloxone (1mg/kg), a specific inhibitor of opioid receptors. The results suggest that enkephalins may play a role in the regulation of copulatory behavior. 14 references. (Author abstract)

001550 Redgrave, Peter. Department of Psychology, University of Sheffield, Sheffield, S10 2TN, England **Modulation of intracranial self-stimulation behaviour by local perfusions of dopamine, noradrenaline and serotonin within the caudate nucleus and nucleus accumbens.** Brain Research (Amsterdam). 155(2):277-295, 1978.

A push/pull perfusion system was used to administer different consecutive doses of dopamine (DA), norepinephrine (NE), and 5-hydroxytryptamine (5-HT) to discrete regions within the caudate nucleus (CN) and nucleus accumbens (NAC) of male hooded rats during intracranial self-stimulation (ICSS). Electrode placements supporting ICSS were in the medial forebrain bundle and the ventral mesencephalic tegmentum. Eleven electrode/cannula combinations were responsive to both DA and 5-HT. The DA response profile was typified by a significant increase in mean presses/minute, a significant decrease in mean duration/press, and no significant change in mean time pressed/minute. The response profile for 5-HT was the converse of the DA pattern for the first two measures of ICSS, and no significant change in mean time pressed/minute was observed. Eight electrode/cannula combinations were sensitive to NE: for five combinations the response pattern was similar to that of DA, but the changes in ICSS were generally larger and of longer duration. For the remaining three combinations, there was no

major change in mean presses/minute, but a dramatic increase in the mean duration/press and mean time pressed/ minute was observed. It is suggested that the central control of ICSS behavior may depend in part upon a relative balance between DA and 5-HT systems within the CN and NAC, which may be subject to additional modulation by the activation of an adrenergic receptor. 58 references. (Author abstract modified)

001551 Riley, Anthony L.; Lovely, Richard H. Department of Psychology, American University, Washington, DC 20016 **Chlordiazepoxide-induced reversal of an amphetamine-established aversion: dipsogenic effects.** Physiological Psychology. 6(4):488-492, 1978.

Chlordiazepoxide induced reversal of an amphetamine established aversion was examined in two experiments with naive female Wistar rats. Chlordiazepoxide attenuated conditioned taste aversions if given prior to a one bottle aversion test, but had no effect if given prior to a two bottle choice between water and the previously poisoned solution. This suggest that the attenuation resulted from chlordiazepoxide's dipsogenic effect, independent of its reported disinhibitory effects on suppressed behavior. Results are discussed in relation to general assessments of chlordiazepoxide's antipunishment effects on fluid motivated baselines. 26 references. (Author abstract modified)

001552 Riley, Edward P.; Shapiro, Neil R.; Lochry, Elizabeth A. Department of Psychology, State University of New York, 1400 Washington Avenue, Albany, NY 12222 **Hypnotic susceptibility to various depressants in rats selected for differential ethanol sensitivity.** Psychopharmacology (Berlin). 60(3):311-312, 1979.

The effects of phenobarbital and chloral hydrate on sleep time were studied in two rat lines selectively bred for differential sensitivity to ethanol. The ""most affected" rats, bred for greater in impairment after subhynotic doses of ethanol, were also more sensitive to the hypnotic effects of phenobarbital and chloral hydrate. Results are discussed in terms of a phenotypic difference in central nervous sytem sensitivity to a range of sedative/hypnotics. 5 references. (Author abstract modified)

001553 Roberts, David C. S.; Mason, Stephen T.; Fibiger, Hans C. A. V. Davis Center for Behavioral Neurobiology, Salk Institute, P. O. Box 1809, San Diego, CA 92112 **6-OHDA lesion to the dorsal noradrenergic bundle alters morphine-induced locomotor activity and catalepsy.** European Journal of Pharmacology (Amsterdam). 52(2):209-214, 1978.

The effects of 6-hydroxydopamine (6-OHDA) lesions of the dorsal noradrenergic bundle on the behavioral effects of morphine were investigated in rats. In intact rats, morphine produced an initial depression during the first hour postinjection, followed by a prolonged hyperactive phase. The 6-OHDA lesions significantly potentiated the locomotor depressant effects of morphine (10 and 20mg/kg) but did not affect the subsequent stimulant action of morphine. The cataleptic action of morphine (20mg/kg) was also potentiated in 6-OHDA treated rats. The 6-OHDA lesions depleted hippocampal and cortical noradrenaline (NA) to 3% and hypothalamic NA to 32% of control values and caused significant increases in cerebellar and spinal NA. Results suggest a role for NA in the depressant effects of morphine but not in its subsequent stimulant effect. 26 references. (Author abstract modified)

001554 Rondeau, Daniel B.; Jolicoeur, Francois B.; Belanger, Ferdinand; Barbeau, Andre. Dept. of Neurobiology, Clinical Research Institute of Montreal, 110 Pine Avenue West, Montreal, Quebec H2W 1R7, Canada **Motor activity induced by substance P in rats.** Pharmacology Biochemistry and Behavior. 9(6):769-775, 1978.

The effects of intraventricular injections of various doses of synthetic substance P (SP) on motor activity in rats were investigated. Activity scores as determined by photocell counts recorded for a 15 min test period were significantly increased in animals injected with 0.30 and 1.25mcg/rat SP. The other doses examined did not affect activity. Doses in the range of 40 to 80mcg produced immobility, rigidity, and barrel rotations. Hypersalivation as indicated by a wet fur following an episode of grooming was observed in several animals. Administration of SP, in a dose of 0.60mcg in combination with or 30 min after injections of 2mg/kg d-amphetamine and 1mg/kg apomorphine did not potentiate or reduce the increased activity and stereotypy induced by these drugs. 43 references. (Author abstract modified)

001555 Rosecrans, John A.; Chance, William T.; Spencer, R. Mason. Dept. of Pharmacology, Medical College of Virginia, Richmond, VA 23298 **The discriminative stimulus properties of cyclazocine: generalization studies involving nalorphine, morphine and LSD.** Research Communications in Chemical Pathology and Pharmacology. 20(2):221-237, 1978.

Cyclazocine's mechanism of stimulus control was evaluated, and the ability of cyclazocine to generalize to other drugs such as morphine, nalorphine, and lysergic acid diethylamide (LSD) was studied. Rats learned to discriminate cyclazocine (2mg/kg, intraperitoneally) from saline using a two lever operant procedure within 10 sessions under each drug condition. The cyclazocine discriminative stimulus was both dose related and time related, being antagonized by naloxone at doses approximately 80 times that necessary to block the discriminative stimulus effect of morphine. Cyclazocine also generalized to nalorphine, but not to morphine, pentazocine or LSD. These data suggest that cyclazocine produced discriminative stimulus control of behavior by acting at central nervous system sites different from those affected by morphine or LSD. 12 references. (Author abstract modified)

001556 Rusterholz, D. B.; Spratt, J. L.; Long, J. P. ; Kelly, T. F. Department of Pharmacology, College of Medicine, University of Iowa, Iowa City, IA 52242 **Serotonergic and dopaminergic involvement in the mechanism of action of R-(-)-2,5-dimethoxy-4-bromoamphetamine (DOB) in cats.** Life Sciences. 23(14):1499-1506, 1978.

Intraperitoneally administered R-(-)-enantiomers and S-()-enantiomers of 2,5-dimethoxy-4-bromoamphetamine (DOB) were evaluated for their ability to induce head-body shake, limb flick, and abortive grooming behavior in cats. The R-(-)-enantiomer was consistently more effective than the S-()-isomer in all three behavioral measures. Dose response relationships were evident for head-body shakes and limb flicks for both enantiomers, but reliable abortive grooming responses appeared only after the higher doses of R-(-)-DOB. Cinanserin and methysergide pretreatments effectively antagonized the induction of head-body shakes and limb flicks by 0.1mg/kg R-(-)-DOB. Haloperidol pretreatment significantly antagonized the appearance of these behaviors, suggesting that dopaminergic as well as serotonergic stimulation is involved in the elicitation of these cat behaviors by R-(-)-DOB. 17 references. (Author abstract modified)

001557 Sakurada, Tsukasa; Kisara, Kensuke. Department of Chemical Pharmacology, Tohoku College of Pharmacy, Komatsushima, Sendai 983, Japan **Effects of intraventricularly administered polyamines spermidine and spermine on sleep-wakefulness cycles in rats.** Japanese Journal of Pharmacology (Koyoto). 28(1):125-132, 1978.

The effects of intraventricular administration of the polyamines spermidine (SPD), spermine (SPM), and putrescine (PUT)

on sleep/wakefulness cycles were investigated in male Wistar rats. Rapid eye movement (REM) sleep was significantly reduced 24 to 32 hours after injection of 40mcg SPD, with no marked change in non-REM sleep. From 0 to 8 and 24 to 32 hours after injection of 40mcg SPM, the waking stage was significantly increased and both REM and non-REM sleep were decreased. The amount of total sleep was significantly shorted from 72 to 80 hours after injection of SPD. The administration of SPM significantly reduced the amount of total sleep in every period measured for 8 hours. Injection of 100mcg PUT significantly decreased non-REM sleep and total sleep. Results indicate that intraventricular administration of polyamines inhibits the amount of normal sleep. 21 references. (Author abstract modified)

001558 Sandberg, David E.; Segal, Menahem. Department of Isotope Research, Weizmann Institute of Science, Rehovot, Israel **Pharmacological analysis of analgesia and self-stimulation elicited by electrical stimulation of catecholamine nuclei in the rat brain.** Brain Research (Amsterdam). 152(3):529-542, 1978.

The relationship between intracranial self-stimulation (ICSS) and stimulation produced analgesia (SPA) was investigated in the rat employing an operant bar-press response and a modification of the hot plate test. ICSS and SPA were elicited through bipolar electrodes chronically implanted in two catecholamine nuclei; the nucleus locus coeruleus (LC) and the substantia nigra (SN). These sites have previously been shown to yield both phenomena. SPA was shown to be of a magnitude similar to that of morphine. In addition, SPA deriving from both LC and SN was significantly reversed by the specific opiate antagonist, naloxone. The intensity of the stimulating current sufficient to induce SPA was found to be higher than that required for ICSS. The pharmacological susceptibilities of the two phenomena were tested by administering a number of drugs. Haloperidol, propranolol, pimozide and alpha-methyl-p-tyrosine attenuated ICSS in both LC and SN, while leaving SPA unaffected. In contrast, methysergide and p-chlorophenylalanine blocked SPA and simultaneously facilitated ICSS. The present results indicate a dissociation of ICSS and SPA from LC and SN at both physiological and neurochemical levels; ICSS rates appear to be a function of catecholaminergic tone, while SPA depend upon the integrity of serotonin transmission. 43 references. (Author abstract)

001559 Sandman, Curt A.; Kastin, Abba J. Lab. for Psychophysiological and Neuropeptide Research, Dept. of Psychology, Ohio State University, Columbus, OH 43210 **Interaction of alpha-MSH and FIF-I with d-amphetamine on open-field behavior of rats.** Pharmacology Biochemistry and Behavior. 9(6):759-762, 1978.

In a study of the interaction of the neuropeptide fragments, alpha-MSH and MIF-I with d-amphetamine in influencing open-field behavior of rats, 42 albino rats were injected for 3 successive days with either alpha-MSH, MIF-I or a vehicle solution and then tested for activity and hind leg rearing in the open-field. On days 4, 5, and 6, half of the Ss received additional injections of d-amphetamine in three different doses or a vehicle solution. Only d-amphetamine influenced activity, with the largest dose exerting the greatest effect. Increases in activity after treatment with the combination of d-amphetamine and alpha-MSH was significant. Hind leg rearing was potentiated by injections of both d-amphetamine and alpha-MSH while the injection of these substances alone had negligible influences on behavior. 15 references. (Author abstract modified)

001560 Satoh, Masamichi, Kawajiri, Shin-ichi; Yamamoto, Masaki; Makino, Hisako; Takagi, Hiroshi. Department of Pharmacology, Faculty of Pharmaceutical Sciences, Kyoto University, Kyoto 606, Japan **Reversal by naloxone of adaptation of rats to noxious stimuli.** Life Sciences (Oxford). 24(8):685-689, 1979.

Bradykinin, a potent pain producing substance, produced flexor reflexes of the hindlimb when injected into the common iliac artery of the rat. The bradykinin induced response was reduced following the repetition of such noxious stimuli in some male Sprague-Dawley rats (noxious/adaptable), but not others of the same strain (Noxious/nonadaptable). Naloxone in doses of 0.1to 2.0mg/kg restored the flexor reflexes to the noxious stimulation in a dose dependent manner in the noxious/adaptable rats, with a median effective dose of 0.61mg/kg. However, naloxone in doses up to 5.0mg/kg produced no hyperanalgesic effect in the nonadaptable group. Results indicate that genetic variation in endogenous opioid systems may account for individual variation in responsiveness to nociceptive stimuli. 22 reference. (Author abstract modified)

001561 Sbordone, Robert J.; Wingard, Joseph A.; Elliott, Mark L.; Jervey, John. Neuropsychiatric Institute, University of California School of Medicine, Center for Health Sciences, Los Angeles, CA 90024 **Mescaline produces pathological aggression in rats regardless of age or strain.** Pharmacology Biochemistry and Behavior. 8(5):543-546, 1978.

Several measures of aggressive behavior were investigated in three ages (40-50, 90-11-, and 180-200 days old) and in three strains (Sprague-Dawley, Wistar, and Long-Evans) of rats before and following the administration of mescaline hydrochloride in a shock elicited aggression situation. The measures included the number of fights, duration of fighting, latency of fighting, number of bites inflicted, and a composite index of pathological aggression. During predrug baseline testing, older rats of all strains engaged in more frequent fights that were longer in duration and more intense than younger animals. When the animals were tested with mescaline, they engaged in significantly more fights, biting, and pathological aggression than1during baseline testing, regardless of their age or strain. These results suggest that mescaline induced pathological aggression in rats is a robust phenomenon. 10 references. (Author abstract)

001562 Schallert, Timothy; Whishaw, Ian Q.; Ramirez, Victor D.; Teitelbaum, Philip. Department of Psychology, University of Illinois at Urbana-Champaign, Champaign, IL 61820 **Compulsive, abnormal walking caused by anticholinergics in akinetic, 6-hydroxydopamine-treated rats.** Science. 199(4336):1461-1463, 1978.

The effects of anticholinergic drugs on locomotion in akinetic rats were studied. In otherwise profoundly akinetic rats that had been severely depleted of brain catecholamines, anticholinergic drugs caused excessive walking. The effect did not appear until 10 days after surgery and then increased with time, suggesting that a phenomenon analogous to denervation supersensitivity may be involved. If the animals walked into corners, they were unable to turn around or back out. Their gait was reminiscent of that of patients with Parkinson's disease. The results are consistent with a mutually antagonistic interaction between cholinergic and dopaminergic brain systems and emphasize certain complexities in this interaction. 23 references. (Author abstract)

001563 Schlemmer, Raymond Francis, Jr. University of Illinois at the Medical Center **Amphetamine-induced behavioral changes in primate social colonies. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7804341, HC$15. MF$7.50. 151 p. 1977.

In an attempt to create an animal model of psychosis, d-amphetamine (1.6mg/kg in time release form) was administered nasogastrically to selected members of adult Stumptail macaque

social colonies for 12 consecutive days. Amphetamine induced abnormal behavior and also altered normal behavior patterns. The two major forms of abnormal behavior induced in treated monkeys were stereotyped behavior and hypervigilance. The major alterations of normal behavior patterns induced in most treated animals included decreased social grooming, increased self-grooming, and isolation from other monkeys in the colony. Administration of an equivalent dose of l-amphetamine to two monkeys induced behavioral changes similar but not identical to those triggered by the d-isomer. Administration of the neuroleptics haloperidol, pimozide, and chlorpromazine and the tyrosine hydroxylase inhibitor alpha-methyl-paratyrosine partially antagonized d-amphetamine induced behavior, as did central cholinergic activation with physostigmine following pretreatment with methscopolamine. It is concluded that the responses of amphetamine treated monkeys to psychotropic agents are similar to those of schizophrenic patients. (Journal abstract modified)

001564 Schreiber, Henry; Bell, Robert; Wood, Gibson; Carlson, Richard; Wright, Linda; Kufner, Michael; Villescas, Ramiro. Washington University School of Medicine, Dept. of Psychiatry, 4940 Audubon Avenue, St. Louis, MO 63110 **Early handling and maternal behavior: effect on d-amphetamine responsiveness in rats.** Pharmacology Biochemistry and Behavior. 9(6):785-789, 1978.

The effects of early handling and maternal behavior on the behavioral changes associated with chronic amphetamine administration in rats were investigated. Seven litters received early handling daily during the first week following parturition and seven litters were undisturbed. At 105 days of age, male animals from nonhandled litters showed a decline in rearings induced by d-amphetamine. Four litters were handled and returned to a mother present nest and four litters were handled and returned to a mother absent nest. At 55 days of age, a handling effect on open-field activity was observed. At 75 days, handled animals, whether maternally separated or not, showed no decline in drug induced rearings; maternally separated animals, whether handled or not, showed fewer entries and increased body weight. However, only animals from handled, mother present litters showed a retarded increase in stereotypy across 8 test days. Results indicate that behavioral manipulations early in life influence responsiveness to d-amphetamine in adulthood. 17 references. (Author abstract modified)

001565 Scotti de Carolis, Arsenia; Massotti, Marino. Laboratorio de Farmacologia, Istituto Superiore de Sanita, Viale Regina Elena, 299,I-00161 Roma, Italy **Electroencephalographic and behavioral investigations on ""gabaergic" drugs: muscimol, baclofen, and sodium gamma-hydroxybutyrate: implications on human epileptic studies.** Progress in Neuro-Psychopharmacology (Oxford). 2(4):431-442, 1978.

An electroencephalographic (EEG) and behavioral study of the effects of muscimol, baclofen, and sodium gamma-hydroxybutyrate on rats and rabbits is described. In both species, the EEG effects of the three drugs show remarkable similarities. With low doses, the period of synchronization increased; with high doses, continuous hypersynchronous large amplitude waves intermingled with spikes, eventually leading to a flattened record with scattered spikes. This pattern strongly resembles that induced by alpha-chloralose. The three drugs first induce excitation, with twitches and chewing, followed by muscle relaxation and loss of righting reflex. In the case of muscimol, relaxation is observed after small doses, but an increase of muscle tone up to typical signs of catalepsy ensues at higher doses. 31 references. (Author abstract modified)

001566 Shaffer, D.; Stephenson, J. D.; Thomas, D. V. Department of Child Psychiatry, College of Physicians and Surgeons, Columbia University Medical School, New York, NY 10032 **Some effects of imipramine on micturition and their relevance to its anti-enuretic activity.** Neuropharmacology (Oxford). 18(1):33-37, 1979.

In cats, 1mg/kg imipramine (a dose equivalent to a 25mg clinical dose for a 7-year-old child) increased the functional bladder capacity by 35-160%. The effect lasted about 15 hours and was not due to the local anesthetic, muscle depressant, or cholinolytic activities of the drug. Imipramine potentiated detrusor relaxation evoked by hypogastric nerve stimulation in anesthetized cats, probably by inhibiting noradrenaline reuptake. Since the role of hypogastric innervation in micturition is not completely understood, it is not clear if the antienuretic activity of imipramine can be attributed solely to this action or if an effect at the central level is more important. 20 references. (Author abstract modified)

001567 Shaywitz, Bennett A.; Klopper, Jeffrey H.; Gordon, Judith W. Yale University School of Medicine, 333 Cedar Street, New Haven, CT 06510 **Methylphenidate in 6-hydroxydopamine-treated developing rat pups.** Archives of Neurology. 35(7):463-469, 1978.

To elucidate the relationship between brain catecholamines and the clinical syndrome of minimal brain dysfunction, the effects of methylphenidate hydrochloride (0.25-2.0mg/kg) on activity levels and cognitive performance in normal and 6-hydroxydopamine (6-0HDA) treated Sprague-Dawley rat pups were investigated. Methylphenidate resulted in a significant increase in activity levels of normal rat pups 12 and 19 days of age. In 6-OHDA treated pups, the drug had no effect of activity at 12 days of age and significantly reduced activity at 19 and 26 days. Methylphenidate had no effect on T-maze performance in normal pups, but significantly improved performance in 6-OHDA treated animals. Results suggest that the paradoxical response to methylphenidate found in 6-OHDA treated rat pups may be the result of central denervation supersensitivity. 38 references. (Author abstract modified)

001568 Shearman, G.; Miksic, S.; Lal, H. Dept. of Pharmacology and Toxicology, College of Pharmacy, University of Rhode Island, Kingston, RI 02881 **Discriminative stimulus properties of desipramine.** Neuropharmacology (Oxford). 17(12):1045-1048, 1978.

Male hooded (Long-Evans) rats were trained to discriminate between 10mg/kg desipramine and saline in an operant procedure of lever-pressing on a fixed ratio 10 schedule of food reinforcement. Sixty of the rat learned to reliably discriminate desipramine from saline. The rate of lever pressing at 10mg/kg desipramine was 49% of the saline response rate. No tolerance to this depressant effect was observed after 20 injections. Subjects selected the appropriate desipramine lever 91, 29, and 18% of the time following 10, 2.5, and 0mg/kg desipramine. Imipramine and protriptyline each produced 50% selection of the desipramine lever at doses of 40mg/kg; lower doses were less effective. At doses of 0.64 and 1.25mg/kg, d-amphetamine produced 20 and 67% despiramine appropriate responding. 9 references. (Author abstract modified)

001569 Siegfried, Bert; Hefti, Franz; Lichtensteiger, Walter; Huston, Joseph P. Institute of Psychology, University of Dusseldorf, Dusseldorf, Germany **Lateralized hunger: ipsilateral attenuation of cortical spreading depression-induced feeding after unilateral 6-OHDA injection into the substantia nigra.** Brain Research (Amsterdam). 160(2):327-340, 1979.

Unilateral injections of 6-hydroxydopamine into the substantia nigra of male Sprague-Dawley rats significantly attenuated eating induced by cortical spreading depression (CSD) from the

hemisphere ipsilateral but not contralateral to the lesion. The lateralized decrease in elicited feeding was correlated with postlesion body weight loss, striatal catecholamine depletion (dopamine, 94%; norepinephrine, 52%) and amphetamine induced ipsilateral turning; it can be characterized as an inability of the lesioned nigrostriatal system to maintain the CSD elicited responses rather than as a failure to induce it. The interhemispheric control procedure indicates that the feeding deficit was caused by reduced nigrostriatal transmission rather than general sensory and motor deficits. It is suggested that CSD induced feeding is due to an activation of integrative sensorimotor systems (especially the nigrostriatal dopamine system), rather than to homeostatic imbalances. 54 references. (Author abstract modified)

001570 Silverman, Peter Barton. University of Texas Health Science Center at Houston Graduate School of Biomedical Sciences **A psychopharmacological study of 2,5-dimethoxy-4-methylamphetamine (DOM). (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7804229, HC$15. MF$7.50. 78 p. 1977.

Rats were trained to discriminate 2,5-dimethoxy-4-methylamphetamine (DOM) from saline in two experiments using reinforced operant procedures. In the first experiment, the animals were trained to discriminate injections of either 1.5mg/kg DOM or 1.0mg/kg ()-amphetamine from saline. Stimuli produced by DOM and ()-amphetamine were not identical, with hallucinogenic compounds showing greater similarity to DOM than to ()-amphetamine. The psychomotor stimulant methylphenidate produced a stimulus similar to ()-amphetamine but not similar to DOM. Cinanserin and methysergide, serotonin antagonists with central nervous system activity, eliminated the DOM stimulus, and haloperidol, a dopamine antagonist, blocked the ()-amphetamine stimulus. The peripheral serotonin antagonist xylamidine did not block the stimulus produced by either training drug. In the second experiment, the rats were trained to discriminate 0.75 and, subsequently, 0.5mg/kg DOM from saline. 2,5-Dimethoxy-4-ethylamphetamine, LSD, mescaline and psilocybin all produced predominantly DOM appropriate responding which was antagonized in each case by pretreatment with cinanserin. Acute administration of ()-amphetamine, but not ()-DOM, (-)-DOM, or mescaline, increased response rates for electrical brain stimulation in rats implanted with hypothalamic electrodes. (Journal abstract modified)

001571 Simpson, John B.; Reid, Ian A.; Ramsay, David J.; Kipen, Howard. Department of Psychology, University of Washington, Seattle, WA 98195 **Mechanism of the dipsogenic action of tetradecapeptide renin substrate.** Brain Research (Amsterdam). 157(1):63-72, 1978.

The mechanism of the dipsogenic action of synthetic tetradecapeptide renin substrate (TDP) was studied in male Long-Evans rats with chronically implanted lateral ventricular cannulae. All hormones and drugs were injected via the ventricular cannulae. The dipsogenic action of TDP was unaffected by the renin inhibitor pepstatin but was markedly reduced by the angiotensin converting enzyme inhibitor SQ 20881. Homogenates of rat brain readily formed angiotensin II from TDP in vitro; this was similarly unaffected by pepstatin and was reduced or abolished by SQ 20881 or by chelating agents. Natural renin substrate did not cause drinking and did not generate angiotensin II when incubated with brain homogenates. These results indicate that rat brain converting enzyme can generate angiotensin II from TDP and that this effect is responsible for dipsogenic action of TDP. 17 references. (Author abstract)

001572 Sinden, J. D.; Atrens, D. M. Department of Psychology, University of Sydney, Sydney New South Wales 2006, Australia **5-Methoxy-NN-dimethyltryptamine: differential modulation of the rewarding and aversive components of lateral hypothalamic self-stimulation.** Journal of Pharmacy and Pharmacology (London). 30(4):268-270, 1978.

The effects on self-stimulation of 5-methoxy-NN-dimethyltryptamine (5-MeODMT), a hallucinogenic indolealkylamine believed to be an agonist at both presynaptic and postsynpatic 5-hydroxytryptamine (5-HT) receptors, were studied in eight male Wistar rats. The use of a two way shuttle box permitted the differentiation of specific reward and aversion modulation effects from nonspecific performance changes. The data indicate that at a dose below the threshold for producing nonspecific toxic effects 5-MeODMT significantly and differentially modulates the rewarding and aversive components of lateral hypothalamic intracranial stimulation. It is suggested that the reward enhancement produced by 5-MeODMT reflects an effect on presynaptic 5-HT neurons; thus, the data are consistent with recent reports that, like noradrenaline, 5-HT is an excitatory transmitter with respect to lateral hypothalamic reward processes. 14 references.

001573 Sloviter, R. S.; Drust, E. G.; Connor, J. D. Dept. of Pharmacology, Milton S. Hershey Medical Center, Pennsylvania State University College of Medicine, Hershey, PA 17033 **Serotonin agonist actions of p-chlorophenylalanine.** Neuropharmacology (Oxford). 17(12):1029-1033, 1978.

In combination with a monoamine oxidase inhibitor (tranylcypromine, TCP), p-chlorophenylalanine (pCPA) caused a behavioral syndrome in male Sprague-Dawley rats previously shown to be due to serotonin (5-HT) receptor activation. This syndrome was also induced by p-chlorophenylethylamine (pCPEA), a decarboxylation product of pCPA. Decarboxylase inhibition prevented the syndrome after pCPA administration, but not after pCPEA. Prior depletion of brain 5-HT to 18% of control prevented the syndrome caused by pCPA/TCP or by pCPEA. Subsequent replacement of 5-HT in depleted rats with 5-hydroxytryptophan restored the behavioral effects of both pCPA and pCPEA. These results indicate that pCAP, after inhibition of monoamine oxidase, causes 5-HT receptor activation, probably via an action of its decarboxylation product, pCPEA. The mechanism appears to involve displacement of endogenous 5-HT by pCPEA. Since pCPA has a long half-life, continued synthesis of pCPEA may cause anomalous behavioral effects not correlated with 5-HT depletion, and this possibility should be considered in behavioral studies with pCPA. 16 references. (Author abstract modified)

001574 Smith, James B.; Branch, Marc N.; McKearney, James W. Worcester Foundation for Experimental Biology, 222 Maple Avenue, Shrewsbury, MA 01545 **Changes in the effects of d-amphetamine on escape responding by its prior effects on punished responding.** Journal of Pharmacology and Experimental Therapeutics. 207(1):159-164, 1978.

The effects of d-amphetamine on escape responding in squirrel monkeys were studied as a function of the monkey's prior drug experience. In one schedule, the animal's response decreased a shock intensity which otherwise decreased as a fixed rate (escape). In the second schedule, responses produced food pellets but also increased a shock intensity which otherwise decreased at a fixed rate (punishment). When animals were first studied under the escape condition schedule, d-amphetamine increased responding. Similarly, when animals had an intervening experience under the punishment schedule with no drugs administered, or when the drug was given but the shock increments were temporarily eliminated, d-amphetamine increased subsequent escape responding. However, when animals under the punishment schedule were given d-amphetamine and shock increments occurred as usual during the drug session, the drug no

longer increased either punished or subsequent escape responding. 12 references. (Author abstract modified)

001575 Smith, Robert C.; Strong, J. Randolph; Hicks, Paul B.; Samorajski, T. Section of Behavioral Neurochemistry, Texas Research Institute of Mental Sciences, 1300 Moursund, Texas Medical Center, Houston, TX 77030 **Behavioral evidence for supersensitivity after chronic bromocriptine administration.** Psychopharmacology (Berlin). 60(3):241-246, 1979.

Behavioral evidence for the development of tolerance to bromocriptine (BRC) and supersensitivity to BRC and other dopamine agonists after chronic administration of BRC to C57BL/6J mice is presented. In mice treated for 30 days with BRC or BRC in combination with L-DOPA, tolerance developed fairly quickly to the depressant effect of BRC on wheel running behavior (WR). Mice receiving BRC showed significant increases in WR by the second week of chronic drug administration; this increase persisted for at least 2 days after the termination of chronic injections. During the first week after termination of chronic injections, low doses of apomorphine and methylphenidate induced significantly more stereotyped gnawing in BRC and BRC/L-DOPA treated mice than in control mice or mice treated with L-DOPA alone. 30 references. (Author abstract modified)

001576 Smith, Robert F. Dept. of Psychology, George Mason University, 4400 University Drive, Fairfax, VA 22030 **Mediation of footshock sensitivity by serotonergic projection to hippocampus.** Pharmacology Biochemistry and Behavior. 10(3):381-388, 1979.

The effects of manipulation of serotonergic function on footshock sensitivity were investigated in male Sprague-Dawley rats. Depletion of telencephalic serotonin by p-chlorophenylalanine injection, medial forebrain bundle lesion, or septal lesion resulted in increased reactivity; this increased sensitivity was reversed by injections of d,l-5-hydroxytryptophan (5-HTP), which restored telencephalic serotonin levels to normal. Hippocampal lesions did not further increase footshock sensitivity, but significantly attenuated the effectiveness of 5-HTP in restoring sensitivity to normal. Results suggest that the hippocampus may be an important site of action of serotonin in modulating reactivity to footshock. The reported failure of raphe lesions to increase reactivity may be due to failure to adequately deplete hippocampal serotonin. 31 references. (Author abstract modified)

001577 Spaulding, T. C.; Venafro, J. J.; Ma, M. G.; Fielding, S. Hoechst-Roussel Pharmaceuticals, Inc., Route 202-206 North, Somerville, NJ 08876 **The dissociation of the antinociceptive effect of clonidine from supraspinal structures.** Neuropharmacology (Oxford). 18(1):103-105, 1979.

The tail flick assay was used to assess the antinociceptive effects of morphine and clonidine in control male Swiss-Webster mice and in mice with spinal cord transections at the T6-T8 level. The median effective dose for morphine was increased 4-7 fold in spinalized mice, but that of clonidine was not significantly altered. These results demonstrate a clear separation of the principle sites of action for morphine and clonidine in this assay. 10 references. (Author abstract modified)

001578 Sprague, G. L.; Takemori, A. E. Richmond Toxicology Laboratory, Stauffer Chemical Co., 1200 South 47th St., Richmond CA 94804 **Effect of methamphetamine on the development of acute morphine tolerance and dependence in mice.** Life Sciences (Oxford). 23(22):2491-2498, 1978.

The effect of methamphetamine on morphine analgesia was studied in nontolerant male Swiss-Webster mice and in mice made acutely tolerant to morphine following a single injection of 100mg/kg morphine. Methamphetamine increased the analgesic potency of morphine, as measured in the tail flick assay, in both tolerant and nontolerant mice. However, the median effective doses for morphine analgesia and naloxone precipitated jumping were not significantly different in mice pretreated with 100mg/kg morphine and those given morphine and 3.2mg/kg methamphetamine, indicating that methamphetamine had no effect on the development of acute morphine tolerance and dependence. Four day pretreatment with methamphetamine produced cross-tolerance to morphine analgesia, which was not accompanied by enhanced sensitivity to naloxone. 17 references. (Author abstract modified)

001579 Stewart, R. Malcolm; Campbell, Alexander; Sperk, Gunther; Baldessarini, Ross J. Department of Neurology, Southwestern Medical School, Dallas, TX 75235 **Receptor mechanisms in increased sensitivity to serotonin agonists after dihydroxytryptamine shown by electronic monitoring of muscle twitches in the rat.** Psychopharmacology (Berlin). 60(3):281-289, 1979.

Muscle twitches and autonomic changes were induced by systemic injections of L-5-hydroxytryptophan (5-HTP) or the serotonin agonist 5-methoxy-N,N-dimethyltryptamine (5-MeO-DMT) in male Sprague-Dawley rats previously lesioned with intracranial 5,7-dihydroxytryptamine (5,7-DHT). Spontaneous locomotor activity was strongly reduced after 5-HTP in both intact and lesioned rats, so that electronically monitored activity correlated very closely with disordered jerking movements scored by a behavioral rating scale. This myoclonus was dependent on the doses of 5-HTP and of 5,7-DHT and was strongly inhibited by serotonin antagonists. In lesioned rats, myoclonus occurred with unaltered activity of monoamine oxidase (MAO) and after only small increases in serotonin levels after 5-HTP; in intact rats, even large increases in availability of serotonin or strong inhibition of serotonin uptake failed to induce myoclonus unless MAO was first inhibited. The respnse to 5-HTP in lesioned rats was attenuated by repeated injections of 5-HTP or 5-MeO-DMT. This decreased response was in turn blocked by repeated doses of a serotonin antagonist, but appeared not to be due to altered metabolism of 5-HTP or serotonin; repeated retreatment with cyproheptadine potentiated the myoclonic response to 5-HTP after DHT. Changes in postsynaptic receptors may be important in the behavioral supersensitivity following 5,7-DHT, and restitution of serotonin or stimulation of its receptors after presynaptic denervation may suppress any evolving supersensitivity at receptive postsynaptic membranes. 27 references. (Author abstract modified)

001580 Stoff, D. M.; Gorelick, D. A.; Bozewicz, T.; Bridger, W. H.; Gillin, J. C.; Wyatt, R. J. Laboratory of Clinical Psychopharmacology, Div. of Special Mental Health Research, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **The indole hallucinogens, N,N-dimethyltryptamine (DMT) and 5-methoxy-N,N-dimethyltryptamine (5-Me0-DMT), have different effects from mescaline on rat shuttlebox avoidance.** Neuropharmacology (Oxford). 17(12):1035-1040, 1978.

The effects of the indole hallucinogenic drugs N,N-dimethyltryptamine (DMT) and 5-methoxy-N,N-dimethyltryptamine (5-Me0-DMT) on shuttlebox avoidance behavior were compared with those of mescaline in five strians of rats (Long-Evans hooded, Sprague-Dawley, Fischer 344, Roman Low Avoidance, and Roman High Avoidance). All three drugs had dose related disruptive effects on avoidance behavior in rats that performed the conditioned avoidance response at a high baseline level. In rats with poor baseline performance, however, mescaline facilitated performance whereas the two DMT and 5-Me0-DMT had no effect. Strain related differences in sensitivity to the drugs were noted; the Roman High Avoiders showed the least sensi-

tivity to the drugs and the Fischer 344 rats showed the greates drug sensitivity. Mescaline was the least potent of the drugs in disrupting avoidance behavior, and 5-Me0-DMT was the most potent; this order of potency corresponds to the relative potency of the drugs on central serotonergic activity. The facilitatory effect produced by mescaline, but not by 5-Me0-DMT and DMT, may be related to its stronger action on catecholaminergic systems. 35 references. (Author abstract modified)

001581 Sumners, C.; Woodruff, G. N.; Poat, Judith A.; Munday, K. A. Department of Physiology and Pharmacology, University of Southampton, Bassett Crescent East, Southampton SO9 3TU, England **The effect of neuroleptic drugs on drinking induced by central administration of angiotensin or carbachol.** Psychopharmacology (Berlin). 60(3):291-294, 1979.

The effect of a series of neuroleptic drugs on the drinking response elicited by intracerebroventricular injection of angiotensin or carbachol into conscious male Wistar rats was studied. The intraperitoneal injection of haloperidol, cis-flupenthixol, or fluphenazine antagonized drinking induced by angiotensin or carbachol. When injected into the lateral ventricles, haloperidol, fluphenazine, cis-flupenthixol, and sulpiride were potent inhibitors of angiotensin induced drinking, but had little effect on the dipsogenic action of carbachol. Clozapine, administered centrally, antagonized drinking caused by both angiotensin and carbachol. Pimozide and chlorpromazine were also potent inhibitors of angiotensin induced drinking, while trans-flupenthixol was inactive. Results support the concept of an involvement of dopamine in angiotensin induced drinking. 21 references. (Author abstract)

001582 Takahashi, R. N.; Singer, G.; Oei, T. P. S. Dept. of Psychology, La Trobe University, Bundoora, Victoria 3083, Australia **Schedule induced self-injection of d-amphetamine by naive animals.** Pharmacology Biochemistry and Behavior. 9(6):857-861, 1978.

In a study of schedule induced self-injection of d-amphetamine, naive rats were initially allowed to self-inject infusions of d-amphetamine under conditions of 100% body weight and 80% reduced body weight with or without a fixed time 1 min (FT1) food delivery schedule. Self-injection rates of animals under 100% and 80% body weight were compared with rates of animals at 90% body weight with or without FT1 schedule conditions. Results show that: 1) when body weight is reduced to 80%, animals without an FT1 food delivery schedule self-inject at a higher rate than those on the FT1 schedule, which is contrary to self-injection patterns found for nicotine, methadone, and heroin, 2) the lowest dose (0.05mg/kg) produced the highest self-injection rate in all conditions, and 3) the highest level of food deprivation (80%) is more effective than normal and 90% body weight in producing amphetamine self-injection. 17 references. (Author abstract modified)

001583 Taylor, David A.; Fennessy, Max R. Department of Pharmacology, University of Melbourne, Parkville, Victoria 3052, Australia **'Antagonist'-precipitated withdrawal in the rat after chronic delta9-tetrahydrocannibinol treatment.** Journal of Pharmacy and Pharmacology (London). 30(10):654-654, 1978.

Changes in monoamine oxidase (MAO) activity in homogenates of male Wistar rat brain, heart, and liver after postmortem storage of the whole animal at 4 degrees were studied. In the brain, there was a significant reduction in MAO activity with tyramine 5-hydroxytryptamine, or benzylamine as substrate, but no significant reduction was observed when betaphenethylamine was used as substrate. In the heart, only the activity towards benzylamine fell significantly after death. In the liver, MAO activity toward all four substrates fell significantly within 24 hours, but only MAO-B activity showed a significant reduction 8 hours after death. When MAO activity of the tissues was measured in terms of protein content (specific activity), no significant reduction in specific MAO activity was seen in brain, heart, or liver with any of the substrates used. Results indicate that measurement of the specific activity of MAO in postmortem material provides a reliable guide to MAO activity at the time of death. 8 references.

001584 Tolbert, Lelland C.; Thomas, Thomas N.; Middaugh, Lawrence D.; Zemp, John W. Department of Biochemistry, Medical University of South Carolina, Charleston, SC 29403 **Ascorbate blocks amphetamine-induced turning behavior in rats with unilateral nigro-striatal lesions.** Brain Research Bulletin. 4(1):43-48, 1979.

The ability of ascorbate to block dopamine receptors was studied in Long-Evans hooded rats given unilateral nigrostriatal lesions with 6-hydroxydopamine. Intraperitoneal injections of amphetamine induced circling behavior in these rats due to release of striatal dopamine contralateral to the lesion. Intraperitoneal injections of 1g/kg ascorbic acid elevated brain ascorbate and attenuated the amphetamine induced turning behavior. These results suggest that ascorbic acid may have a role in regulating dopaminergic transmission and could be of therapeutic value in disorders involving functional dopamine excess. 29 references. (Author abstract modified)

001585 van Ree, Jan M.; Smyth, Derek G.; Colpaert, Francis C. Rudolf Magnus Institute for Pharmacology, Medical Faculty, University of Utrecht, Vondellaan 6, Utrecht, The Netherlands **Dependence creating properties of lipotropin C-fragment (beta-endorphin): evidence for its internal control of behavior.** Life Sciences (Oxford). 24(6):495-502, 1979.

To determine the dependence liability of the endogenous opioid peptides, the reinforcing and discriminative stimulus properties of the C-fragment of lipotropin (beta-endorphin) and met-enkephalin were compared with those of heroin and placebo in male Wistar rats. Heroin and the C-fragment of lipotropin induced intraventricular self-administration behavior in drug naive rats, but met-enkephalin did not. When injected into the nucleus raphe magnus, the C-fragment, but not met-enkephalin, acted as a discriminative stimulus in rats trained to discriminate fentanyl from saline. Results indicate that the naturally occurring C-fragment exerts powerful control of behavior, which may be of significance for the understanding of mechanisms underlying opiate dependence. Met-enkephalin did not appear to have reinforcing or narcotic cueing properties. 28 references. (Author abstract modified)

001586 Whishaw, Ian Q.; Robinson, Terry E.; Schallert, Timothy; De Ryck, Marc; Ramirez, Victor D. Department of Psychology, University of Lethbridge, Lethbridge, Alberta, Canada, T1K 3M4 **Electrical activity of the hippocampus and neocortex in rats depleted of brain dopamine and norepinephrine: relations to behavior and effects of atropine.** Experimental Neurology. 62(3):748-767, 1978.

Spontaneous behavior and EEG activity were studied in male Sprague-Dawley rats depleted of norepinephrine (NE) and dopamine (DA) by intraventricular injections of 6-hydroxydopamine. A direct relation between the degree of DA depletion and the degree of adipsia/aphagia, akinesia, and sensorimotor neglect was found. Rats with little or no central DA did not eat or drink, walk spontaneously, or orient to tactile stimulation but did initiate grooming as often as controls. The DA depleted animals made continuous postural adjustments, a behavior which may be similar to the akathisia or motor impatience observed in human Parkinson's disease. EEG recordings revealed that both

atropine resistant (movement related) and atropine sensitive (immobility related) forms of neocortical low voltage, fast activity (LVFA) and hippocampal rhythmic slow activity (RSA or theta) survive depletion of brain catecholamines. Furthermore, the amplitude and frequency of theta activity were not changed by DA depletion. It is suggested that neither DA nor NE are critically important for the production of LVFA or RSA, although DA may be indirectly involved in regulating the probability of their occurrence by regulating the probability of the occurrence of movement. 65 references. (Author abstract modified)

001587 White, Norman; Major, Robert; Siegel, Jonathan. Department of Psychology, McGill University, Montreal, Quebec, Canada **Effects of morphine on one-trial appetitive learning.** Life Sciences. 23(19):1967-1971, 1978.

The effects of morphine on learning were studied with rats given intraventricular injections of morphine before and after a single training trial on a water finding task. Rats given morphine performed significantly better on a retention test 24 hours later than did rats given Ringer's injections either before or after the training trial, and they performed significantly better than rats given Ringer's injections both before and after the training trial. The effect of morphine is interpreted as a retroactive strengthening of associations that the rats had formed during the training trial. It is concluded that this effect may serve as a possible model for understanding certain positively reinforcing actions of morphine. 16 references. (Author abstract modified)

001588 Winter, J. C. Department of Pharmacology and Therapeutics, School of Medicine, 127 Farber Hall, SUNY, Buffalo, NY 14214 **Quipazine-induced stimulus control in the rat.** Psychopharmacology (Berlin). 60(3):265-269, 1979.

The hypothesis that quipazine mimics the stimulus properties of indoleamine and phenethylamine hallucinogens was tested in CFN strain rats. In rats trained with 10mg/kg mescaline and saline in a single lever response task, quipazine yielded intermediate results (58% mescaline appropriate responding) at 1mg/kg. In rats trained with 3mg/kg quipazine and saline in a two lever response choice task, responding to lysergic acid diethylamine (LSD) was intermediate (68% quipazine appropriate) at 100mcg/kg, but complete substitution was observed at 150mcg/kg (97% quipazine appropriate). Rats trained with LSD and saline in the two lever task and tested with quipazine responded in a fashion indistinguishable from the LSD training condition. The stimulus properties of quipazine alone and in cross tests in mescaline or LSD trained subjects were blocked by the serotonergic antagonist BC-105; the dopaminergic antagonist butaclamol and the alpha-adrenergic antagonist phentolamine had no effect on quipazine. Results suggest that quipazine produces its stimulus effects by a serotonergic mechanism and that these effects are quite similar to those of LSD and mescaline. 26 references. (Author abstract modified)

001589 Wise, Roy A. Center for Research on Drug Dependence, Dept of Psychology, Concordia University, Montreal, Quebec H3G 1M8, Canada **Neuroleptic attenuation of intracranial self-stimulation: reward or performance deficits?** Life Sciences. 22(7):535-542, 1978.

The reward of performance deficits of neuroleptics in animals, specifically the effects of primozide on food rewarded level pressing, was investigated. The results indicate the neuroleptics cause reduced self-stimulation by blunting the reward impact of the stimulation. In all cases, the animals began to perform normally, demonstrating adequate response capacity in the early stages of responding after neuroleptic pretreatment. Lever pressing performance after neuroleptics progressively deteriorated in all the animals. It is concluded that the neuroleptics reduce the effectiveness of brain stimulation and psychomotor stimulant rewards and do so at doses below those causing significant performance incapacity. 43 references.

001590 Wise, Roy A.; Spindler, Joan; Legault, Linda. Department of Psychology Concordia University, 1455 de Maisonneuve Blvd. W., Montreal, Quebec, H3G 1M8, Canada **Major attenuation of food reward with performance-sparing doses of pimozide in the rat.** Canadian Journal of Psychology (Toronto). 32(2):77-85, 1978.

Major attenuation of food reward with performance sparing doses of pimozide was investigated in male Sprague-Dawley rats who were trained to lever-press for food or saccharin reward, and then tested 4 successive times under conditions of normal reward, nonreward, or pretreatment with the dopamine receptor blocker, pimozide. Normally rewarded animals progressively slowed responding within sessions with food reward but not with saccharin reward. Nonrewarded animals and pimozide treated rats responded vigorously at the beginning of sessions, but slowed within sessions and showed reduced willingness to respond across sessions. Normal responding in the first session and in the early phases of later sessions rules out significant motor impairment; pimozide appears to attenuate selectively the rewarding quality of food for hungry rats. 21 references. (Author abstract modified)

001591 Worms, P.; Willigens, M. T; Lloyd, K. G. Synthelabo-LERS, Biology Unit, Department of Neuropharmacology, 31 avenue Paul Vaillant Couturier, F-92220 Bagneux, France **GABA involvement in neuroleptic-induced catalepsy.** Journal of Pharmacy and Pharmacology (London). 30(11):716-718, 1978.

The effects of direct and indirect gamma-aminobutyric acid (GABA) agonists and antagonists on neuroleptic induced catalepsy were investigated in male Sprague-Dawley rats. Muscimol (0.1mg/kg ip), dipropylacetamide (60mg/kg ip), aminooxyacetic acid (AOAA, 25mg/kg ip), and diaminobutyric acid (DABA, 300mg/kg ip) all markedly potentiated the catalepsy induced by haloperidol (0.3or 0.6mg/kg ip). AOAA (25mg/kg) and muscimol (1mg/kg) also potentiated the catalepsy induced by chlorpromazine (6.0or 9.0mg/kg) or thioridazine (10 or 30mg/kg). By themselves, at these doses, muscimol, AOAA, and DABA did not elicit catalepsy. In subconvulsant doses, bicuculline, metrazole, and allylglycine significantly decreased, in a dose dependent manner, the catalepsy induced by haloperidol (0.75mg/kg). However, when a lower dose (0.3mg/kg) of haloperidol was used, bicuculline and picrotoxin exhibited a biphasic effect; low doses of the compounds significantly increased and high doses decreased the neuroleptic induced catalepsy. Results support the view that GABA neurons participate in the feedback regulation of dopamine neurons following dopamine receptor blockade. 18 references.

001592 Yaksh, Tony L. Department of Neurosurgical Research, Mayo Clinic, Rochester, MN 55901 **Direct evidence that spinal serotonin and noradrenaline terminals mediate the spinal antinociceptive effects of morphine in the periaqueductal gray.** Brain Research (Amsterdam). 160(1):180-185, 1979.

To determine the involvement of spinal serotonergic and noradrenergic systems in the antinociceptive effects of morphine in the periaqueductal gray (PAG), morphine was injected into the PAG of rats given the serotonergic receptor antagonist methysergide and the noradrenergic receptor antagonist phentolamine via an intrathecal catheter. The local spinal action of phentolamine and methysergide reversibly antagonized the antinociceptive effects of morphine acting in the PAG. Results suggest that

the action of morphine in the PAG produces a joint activation of the descending serotonergic and noradrenergic systems. It is suggested that the antinociceptive effects of PAG morphine are mediated by two dissociable components: descending systems modifying spinal sensory processing, and a supraspinal mechanism that alters the animals' behavioral response to noxious stimulation independently of the changes produced in the spinal throughput of nociceptive information. 25 references.

001593 Yamamoto, Takashi; Kosugi, Toshiko; Kawamura, Yojiro. Dept. of Oral Physiology, Dental School, Osaka University, 4-3-48 Nakanoshima, Kitaku, Osaka 530, Japan **Taste preference and taste nerve responses of rats under copper toxicosis.** Pharmacology Biochemistry and Behavior. 9(6):799-807, 1978.

Effects of administration of cupric chloride on the taste preference for the four basic taste solutions were studied by means of two bottle preference tests in rats. The intraperitoneal injection of cupric chloride daily for 2 weeks induced no significant changes in the taste preference for both sodium chloride and sucrose solutions. On the other hand, the taste preference for tartaric acid and quinine HC1 solutions was influenced by cupric chloride injection; 10 out of 27 rats took tartaric acid or quinine solutions over water. Discontinuation of copper administration restored the altered preference responses to the preference level seen in the control period. Patterns of the summated taste nerve response to various concentrations of the four basic taste stimuli in the copper injected rats were similar to those in the control rats. 24 references. (Author abstract modified)

001594 Yamamoto, Tsuneyuki; Ueki, Showa. Dept. of Pharmacology, Faculty of Pharmaceutical Sciences, Kyushu University, Fukuoka, Japan **Effects of drugs on hyperactivity and aggression induced by raphe lesions in rats.** Pharmacology Biochemistry and Behavior. 9(6):821-826, 1978.

The effects of drugs on hyperactivity and aggression induced by raphe lesions in rats were investigated. Midbrain raphe lesions in rats induced hyperactivity and aggressive behavior, including muricide. Hyperactivity in raphe lesioned rats (raphe rats) was significantly suppressed by alpha-methyl-p-tyrosine (alpha-MT), tetrabenazine and neuroleptics such as chlorpromazine and haloperidol, but was reduced only with large doses of L-5-hydroxytryptophan (L-5-HTP). These results suggest that hyperactivity in raphe rats results from the activation of catecholaminergic system which is secondary to reduced serotonergic function. However, muricide in raphe rats was markedly inhibited by L-5-HTP, but was not suppressed by alpha-MT at doses which markedly reduced hyperactivity in raphe rats. 29 references. (Author abstract modified)

001595 Zahniser, Nancy Rutledge. University of Pittsburgh **Is 2-dimethylaminoethanol (deanol) a precursor of acetylcholine? A neurochemical and behavioral investigation. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. Mfilms, No. 77-28015, HC$15. MF$7.50. 258 p. 1977.

A comprehensive neurochemical and behavioral investigation into the mechanism by which 2-dimethylaminoethanol (deanol) elevates levels of choline (Ch) and acetylcholine (ACh) in rodent brains was conducted. Using a specific and sensitive gas chromatograph/mass spectrometic method which is capable of measuring tissue levels of deanol, Ch, and ACh, it was determined that rodent brain, peripheral tissues, and blood all contain very low concentrations, if any, of endogenous deanol. By monitoring the conversion of deuterium labelled deanol into mouse brain Ch and ACh at times ranging from 1/2 to 30 minutes following deanol administration, it was determined that no deanol was converted into brain Ch or ACh within that period. Mouse brain ACh levels increased only after administration of a high dose of deanol, and then only in the striatum. This produced a marked decrease in spontaneous locomotor activity which was antagonized nonspecifically by both atropine and methylatropine. Deanol was not found to affect the striatal cholinergic system secondary to a primary effect on the striatal dopaminergic system. (Journal abstract modified)

001596 Zamir, Nadav; Segal, Menachem. Isotope Department, Weizmann Institute of Science, Rehovot, Israel **Hypertension-induced analgesia: changes in pain sensitivity in experimental hypertensive rats.** Brain Research (Amsterdam). 160(1):170-173, 1979.

Sensitivity to pain was investigated in rats with experimentally induced renal hypertension, sham operated controls, and atrophic kidney controls. Rats with experimental hypertension showed a gradual and highly significant increase in blood pressure and in latency to paw lick. Naloxone produced a pronounced decline in paw lick latency in renal hypertensive rats within 15 minutes, but had no significant effect in control rats. When experimental hypertension was reversed by unilateral nephrectomy, a substantial fall in blood pressure was observed within 5 days, but pain threshold did not return to normal until 20 days after nephrectomy. 15 references.

001597 Zvartau, E. E. Kafedra farmakologii, I Leningradskiy meditsinskiy institut imeni I.P. Pavlova, Leningrad, USSR /**Influence of chronic morphine administration on the ""reward" system in rats.**/ Vliyaniye khronicheskogo vvedeniya morfina na sistemu ""nagrady" u krys. Farmakologiya i Toksikologiya (Moskva). 41(3):270-274, 1978.

The influence of morphine on lateral hypothalamic self-stimulation in rats was studied. Twelve mongrel white male rats were used, of which half constituted a control group. Two monopolar electrodes were implanted in each rat after which morphine was injected in increasing doses over a period of 15 days. A total of 30 injections was performed on each rat. Results indicate that the initial injection of each new step in dosage exerts a predominantly suppressive action upon self-stimulation, while additional injections result in a stable and clearcut activation of the central mechanisms mediating rewards. 10 references. (Journal abstract modified)

05 TOXICOLOGY AND SIDE EFFECTS

001598 Bossart, Josef F. Ohio State University **Conformationally restrained analogs: cyclobutyl analogs of dopamine and 6-hydroxydopamine. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7731832, HC$15. MF$7.50. 124 p. 1977.

To investigate the mechanism of 6-hydroxydopamine induced neurotoxicity, the cyclobutyl analogs, cis and trans-2(2',4',5'-trihydroxyphenyl)cyclobutylamine, were prepared in a stereoselective manner. Pharmacological testing revealed that neither analog possessed neurotoxic properties. The trans-analog had affinity for the uptake mechanism, although it is not clear whether it is taken into the neuron. It appears that a trans-disposition of amine and aromatic functions defines the preferred conformation of dopamine at the postsynaptic dopamine receptor and presynaptic uptake site. The dimethyl analogs, cis and trans-N,N-dimethyl-2(3',4'-dihydroxyphenyl)cylobutylamine had a greater affinity for the binding site than corresponding cis and trans-primary amines. The trans-dimethyl analog was more active than the cis-dimethyl analog in the binding assay, confirming a preferred trans-orientation of amine and aromatic functions at this postsynaptic dopamine receptor. (Journal abstract modified)

001599 Bull, R. J.; Lutkenhoff, S. D.; McCarty, G. E.; Miller, R. G. Toxicological Assessment Branch, Laboratory Studies Di-

vision, Health Effects Research Laboratory, EPA, Cincinnati, OH 45268 **Delays in the postnatal increase of cerebral cytochrome concentrations in lead-exposed rats.** Neuropharmacology (Oxford). 18(1):83-92, 1979.

The accumulation of cerebral cytochromes was examined in the neonatal rat following in utero and and neonatal lead (Pb) exposure. Increases in the cytochrome content were observed spectrally, directly in the tissue, using dual wavelength spectroscopy. Administration of 5-200mg Pb to female CD rats from 14 days prior to breeding through weaning of pups resulted in a delay in the normal increase of cerebral cortical cytochrome in male offspring. This effect was most marked between 10 and 15 days after birth. At 30 days of age, however, Pb treated pups displayed normal cytochrome content. These results demonstrate a delay in the biochemical development of rat brain at very modest elevations of blood Pb concentrations relative to those encountered in human populations. 33 references. (Author abstract modified)

001600 Carlson, Kristin R. Dept. of Pharmacology, University of Massachusetts, Medical School, Worcester, MA **A syndrome resembling tardive dyskinesia which results from chronic methadone treatment.** Psychopharmacology Bulletin. 14(4):76-77, 1978.

In a paper presented at the session on basic issues in tardive dyskinesia, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, a syndrome resembling tardive dyskinesia which results from chronic methadone treatment is described. Several studies are cited which indicate that a syndrome resembling tardive dyskinesia can be produced in two species by chronic narcotic treatment. The major difference between this phenomenon and the condition in humans is the necessity of eliciting the symptoms with an agonist. The possibility that important species differences exist with respect to the spontaneous emergence of symptoms upon neuroleptic withdrawal is noted. 12 references.

001601 Herman, Zbigniew S.; Szczurek, Zbigniew; Wazna-Bogunska, Czeslawa; Trzeciak, Henryk I. Instytut Biologiczno-Fizjologiczny Slaskiej Akademii Medycznej, ul. Marksa 38, 41-808 Zabrze-8, Poland. **/Neuropathological changes in rat brain after long-term treatment with the neuroleptics oxazepam and protriptyline./** Zmiany neuropatologiczne w mozgach szczurow po dlugotrwalym podawaniu neuroleptykow, oksazepamu i protryptyliny. Nuropatologia Polska (Warszawa). 16(4):533-545, 1978.

The effects of chronic treament with fluphenazine (FL), benperidol (BP), pimozide (PI), oxazepam (OZ) and protriptyline (PT) on the central nervous system (CNS) of the rat were studied. FL administered intraperitoneally (i.p.)to the adult male rat in a dose of 1mg/kg during 14, 52, or 60 weeks caused increasing reversible pathomorphological changes. After treatment with FL in a dose of 5mg/kg for 36 weeks the changes were still reversible, whereas such treatment for 52 or 72 weeks resulted in destruction of the nerve cells. BP was given i.p. to adult male rats in a dose of 0.1mg/kg for 27 or 67 weeks, to the females during pregnancy and lactation, and to the offspring beginning from the 8th day until 23 and 64 weeks of life. PI was injected i.p. in a dose of 0.5mg/kg to the females and newborn rats for 53 weeks. Cellular loss and glial proliferation were found after BP and PI administration. OZ given i.p. to adult male rats in a dose of 5mg/kg caused neuronal tigrolysis, nerve cell loss, and cellular glial proliferation, whereas a dose of 50mg/kg for 28 weeks caused disintegration of nerve cells and chronic neuronal disease. PT injected i.p. into the adult males in a dose of 10mg/kg caused ischemic neuronal disease after 2 weeks. Tigrolysis, homogenizing changes in Purkinje cells, and, in some cases, disintegration of nerve cells were found in rats injected with PT for 13 weeks. FL was found to be the most toxic drug for the CNS. 9 references. (Journal abstract)

001602 Mason, Stephen T.; Fibiger, Hans C. Division of Neurological Sciences, Department of Psychiatry, University of British Columbia, Vancouver, B.C. V6T 1W5, Canada **Noradrenaline, fear and extinction.** Brain Research (Amsterdam). 165(1):47-56, 1979.

To determine the role of forebrain noradrenaline (NA) in fear and anxiety, the performance of male Wistar rats on a Sidman avoidance task and in a conditioned emotional response paradigm was studied after extensive depletion of ascending NA systems by intracerebral injection of the selective neurotoxin 6-hydroxydopamine. No alteration in fear motivated acquisition learning of either task was detected, but resistance to extinction was observed on the conditioned emotional task. These findings provide no evidence for a role of ascending NA systems in fear or anxiety but confirm their role in extinction processes. 44 references. (Author abstract modified)

001603 McCauley, P. T.; Bull, R. J.; Lutkenhoff, S. D. Toxicological Assessment Branch, Health Effects Research Laboratory, EPA, Cincinnati, OH 45268 **Association of alterations in energy metabolism with lead-induced delays in rat cerebral cortical development.** Neuropharmacology (Oxford). 18(1):93-101, 1979.

Ethanol/phosphotungstic acid staining revealed reduced synaptic densities and immature synaptic profiles in 15-day-old offsping of female CD rats exposed to 200mg lead (Pb) in drinking water relative to control pups. Cerebral cortical slices from pups of Pb treated dams exhibited enhanced respiratory responses to a 3-30mM increase in potassium ion concentration; this response was associated with a higher rate of glucose uptake and unchanged lactic acid output. Cerebral cortical concentrations of amino acids and serum thyroid hormone levels were not altered by the Pb treatment. These results indicate that the delayed cerebral cortical development following exposure to low levels of Pb may be associated with a direct effect of Pb on cerebral energy metabolism. 37 references. (Author abstract modified)

001604 Weingartner, Herbert; Sitaram, Natraj; Gillin, J. Christian. National Institute of Mental Health, 9000 Rockville Pike, Bethesda, MD 20014 **The role of the cholinergic nervous system in memory consolidation.** Bulletin of the Psychonomic Society. 13(1):9-11, 1979.

The effects of drug induced increases in cholinergic functions on some components of memory trace consolidation and retrieval were studied in the case where drug treatment was introduced just after processing sets of words. Five males and three females each listened to nine groups of five words, and were asked to think of a word which might define or organize each group. Subjects were intravenously administered arecoline hydrobromide (2mg i.v.)or a placebo following all the sets of words. Arecoline hydrobromide, a cholingegic agonist, was found to facilitate the recall of words that were organized and encoded immediately prior to drug treatment. While the number of groups of words and the total number of words recalled were increased, words within recalled structures were unaffected by cholinergic stimulation. The findings define a role of the cholinergic central nervous system in memory consolidation. 17 references. (Author abstract modified)

06 METHODS DEVELOPMENT

001605 Adams, R. N.; Conti, J.; Marsden, C. A.; Strope, Elaine. Department of Chemistry, Kansas University, Lawrence, KS 66045 **The measurement of dopamine and 5-hydroxytrypta-**

mine release in CNS of freely moving unanaesthetized rats. British Journal of Pharmacology (London). 64(3):470P-471P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, a voltammetric technique for monitoring dopamine (DA) and 5-hydroxytryptamine (5HT) release from brain tissue in freely moving unanesthetized rats is described. A potential (0.2-1.0V) is applied to a microcarbon electrode stereotaxically placed within a specific brain region and current changes following the oxidation of electroactive compounds in the vicinity of the electrode tip are recorded. The amount of current produced is proportional to the concentration of substance oxidized. Pharmacological tests are used to distinguish between the oxidation of DA and 5HT. Potentials are applied and current is measured using a chronoampometric digitizer on which the result is displayed as a function of integrated current. The method has been used to measure DA and 5HT release in the caudate and hippocampus following drug administration and electrical stimulation; as expected, d-amphetamine and p-chloroamphetamine increased the current produced in the caudate and the increase with p-chloroamphetamine did not occur in rats pretreated with p-chlorophenylalanine. 1 reference. (Author abstract modified)

001606 Al-Deen, I. H. S.; Shaw, G. G. Department of Pharmacy, University of Nottingham, Nottingham NG7 2RD, England **Assay of picomole quantities of polyamines by high pressure ion-exchange chromatography.** British Journal of Pharmacology (London). 64(3):465P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the use of high pressure ion exchange chromatography to assay picomole quantities of polyamines (spermidine and spermine) is described. Separations are carried out at 75 degrees C on a 15cm by 3.2mm column of a strongly acidic cation exchange resin with a styrene-divinyl benzene polymer lattice incorporating 7.5% cross-linkage and with a bead diameter of 7-10mcm. Buffer selection is controlled by a 6 position solenoid operated rotary valve that feeds a high pressure pump. A similar valve with an external loop permits injections of sample on the high pressure side of the pump. Loop filling is automated using a turntable sampling unit and a peristaltic pump. After separation, the eluant from the column is reacted with o-phthaldehyde and 2-mercaptoethanol in the borate buffer pH 9, which is delivered at the same flow rate as the column effluent by a pulse damped pump. After passage through a short delay coil, the resulting fluorescence is monitored by a flow call fluorometer. The fluorometer output is electrically integrated and displayed on a two channel potentiometric recorder. Automated operation of the analytical sequence is controlled by a programming unit with a film loop timer. This method is also applicable to the assay of most amino acids, including gamma-aminobutyric acid. 2 references. (Author abstract modified)

001607 Barkai, A.; Budek, M.; Brown, D. L.; Fieve, R. R. New York State Psychiatric Institute, New York, NY 10027 **Application of an improved cerebroventricular perfusion technique in the rabbit: effects of pentobarbital or haloperidol on monoamine metabolites and proteins in the perfusate.** Neuropharmacology (Oxford). 17(6):409-414, 1978.

An improved procedure for ventriculo cisternal perfusion of conscious rabbits with artificial cerebrospinal fluid is described. Concentrations of the dopamine metabolite homovanillic acid (HVA), the serotonin metabolite 5-hydroxyindolacetic acid (5-HIAA), and endogenous proteins were determined in cerebroventricular perfusates before and after administration of either pentobarbital or haloperidol. Perfusate levels of 5-HIAA decreased during pentobarbital anesthesia but increased following haloperidol; concentrations of HVA increased 50% after pentobarbital and 300% after haloperidol. The rate of cerebrospinal fluid formation was not influenced by either drug. Protein concentrations in the perfusate decreased substantially following either pentobarbital or haloperidol, suggesting that the action of these neuroactive drugs may be associated with changes in extracellular cerebral proteins. 22 references. (Author abstract modified)

001608 Berridge, T. L. Reckitt & Colman Ltd., Pharmacology Department, Dansom Lane, Hull HU8 7DS, England **A method for injecting drugs into the nucleus tractus solitarii of conscious rats.** British Journal of Pharmacology (London). 64(3):465P-466P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, a method for bilateral injection of drugs into the nucleus tractus solitarii (NTS) of conscious rats is described. Male Sprague-Dawley rats were anesthetized with sodium pentobarbitone and secured in a stereotaxic frame. Two holes were made in the skull anterior to lambda; steel plated cheese headed screws were screwed into these holes to act as anchors for the guide tubes. The guide tubes containing injection cannulae were clamped in a small vice and lowered into the NTS through previously drilled holes. The guide tubes were cemented to the anchor screws and skull, and the wound was closed up. Animals were allowed to recover for 2 days before the descending aorta was cannulated for direct blood pressure and heart rate monitoring. The effects of bilateral injection of adrenoceptor agonists and antagonists into the NTS on blood pressure and heart rate of conscious rats were deomonstrated using this method. 8 references. (Author abstract modified)

001609 Conti, J. C.; Strope, E.; Adams, R. N.; Marsden, C. A. Department of Chemistry, University of Kansas, Lawrence, KS 66045 **Voltammetry in brain tissue: chronic recording of stimulated dopamine and 5-hydroxytryptamine release.** Life Sciences (Oxford). 23(27&28):2705-2715, 1978.

The use of voltammetric microelectrodes to continuously monitor stimulated release of dopamine and 5-hydroxytryptamine is described. A series of experiments in unanesthetized, unrestrained rats indicated that this electrochemical technique successfully monitored dopamine efflux including amphetamine stimulated dopamine release in the caudate. The uses and limitations of this method in pharmacological manipulations of neurotransmitters release are discussed. 11 references. (Author abstract modified)

001610 Cornish, Kurtis G.; Hall, Richard E. Bowman Gray School of Medicine, Winston-Salem, NC **A modification of the dialytrode for simultaneous CNS recording and chemical stimulation.** Pharmacology Biochemistry and Behavior. 10(3):389-392, 1979.

The use of a dialytrode for chemical stimulation studies with simultaneous recording of electrical activity at the site of stimulation is described. The dialytrode is a push/pull cannula consisting of two concentric tubes, a porous membrane covering the tip of the tubing, and a platinum wire loop that extends around the membrane and is used for EEG recordings. The membrane is relatively impermeable to bacteria, but molecules the size of neurotransmitters pass easily through the membrane. 5 references. (Author abstract modified)

001611 Dayton, M. A.; Geier, G. E.; Wightman, R. M. Department of Chemistry, Indiana University, Bloomington, IN 47401 **Electrochemical measurement of release of dopamine and 5-hy-**

droxytryptamine from synaptosomes. Life Sciences (Oxford). 24(10):917-924, 1979.

Liquid chromatography with electrochemical detection was used to determine the endogenous dopamine (DA) and serotonin (5-HT) content in a male Sprague-Dawley rat striatal, crude synaptosomal fraction isolated by centrifugal methods. The electrochemical determinations were accomplished with a new type of electrode material, pressure annealed pyrolytic graphite. The technique permitted direct quantitation of DA and 5-HT with minimal sample pretreatment. The distribution of endogenous 5-HT in each subfraction throughout the centrifugation procedure was approximately equal to that of endogenous DA. The release of DA and 5-HT from the crude synaptosome preparations exhibited properties characteristic of stimulus coupled, depolarization induced release. The release of both transmitters was calcium dependent and was induced by high potassium concentrations or veratridine in the external medium; the latter was blocked by tetrodotoxin. The release was independent of ascorbic acid, but was dependent on the temperature of incubation. 21 references. (Author abstract modified)

001612 Dixon, R. G.; Riley, J. N.; Marchand, E. R. Department of Neurosciences, M-008, University of California, San Diego, School of Medicine, La Jolla, CA 92093 **Simple template method for targeting brain loci in small animal stereotaxy.** Brain Research Bulletin. 3(6):721-722, 1978.

A simple and reliable method for stereotaxic approach at any angle is described, in which representation of the coordinates on a template replaces calculation of stereotaxic coordination. The method is particularly useful when a specific CNS structure must be targeted in a large number of animals, at angles of approach out of the normal vertical plane. This method was applied in a study of afferent pathways to the anterior thalamic nuclei in rats, in which horseradish peroxidase was injected into the anterior dorsal nucleus. With the template technique, all of eight attempted injections were made within the nucleus, compared to a 70% success rate using conventional stereotaxic methods. 1 reference. (Author abstract modified)

001613 Engberg, I.; Flatman, J. A.; Lambert, J. D. C. Institute of Physiology, University of Aarhus, DK-8000 Aarhus C, Denmark **Extracellular and intracellular recording during micro-iontophoresis: an appraisal.** British Journal of Pharmacology (London). 64(3):451P-452P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the use of extracellular recording of changes in neuronal firing and ventral root field potentials (VRF) and of intracellular recording of changes of membrane potential and conductance in response to extracellular iontophoresis from a fixed electrode when the recording electrode was first positioned extracellularly and then moved intracellularly indicate that the act of cell penetration does not in itself qualitatively alter the response of motoneurons to extracellular iontophoresis of DL-homocysteate and glutamate; these agents decreased and reversed the VRF when the cells were depolarized. Thus, an increase of VRF during biogenic amine iontophoresis may be indicative of a hyperpolarization with action potential increase, rather than of neuronal depolarization. 4 references. (Author abstract modified)

001614 Haggard, M. P. MRC Institute of Hearing Research, University of Nottingham Medical School, Queen's Medical Centre, Nottingham, England **Menstrual fluctuations in hearing -- suggestions for hormone or drug monitoring methods in man.** British Journal of Pharmacology (London). 64(3):476P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the use of hearing as a method of drug monitoring is discussed. A task involving the angular localization of sounds by interaural time differences in the region of 100mcsec showed large and significant menstrual variations, while other tasks did not. The estrogen/progesterone ratio may be involved in these hearing differences. It is concluded that psychoacoustics offers a wide range of perceptual phenomena with associated methods of stimulus control and task organization, which can be used to stress and hence reveal the underlying mechanisms more critically than absolute threshold tasks do. 2 references. (Author abstract modified)

001615 Heaton, M. B.; Kosier, M. E. Department of Neuroscience, University of Florida College of Medicine, Gainesville, FL 32610 **Micro-injections in the avian embryo: technical notes.** Brain Research Bulletin. 3(6):715-717, 1978.

Procedures and instrumentation for making microinjections into early avian embryos are described. Tools for implementing injection include support probes and microcannula adapters, which greatly reduce embryonic insult. Using these instruments, viability following certain early embryonic injections has been shown to increase for 29% to 95%. 6 references. (Author abstract)

001616 Kato, Takeshi; Wakui, Yoshiko; Nagatsu, Toshiharu; Ohnishi, Takayuki. Department of Life Chemistry, Graduate School at Nagatsuta, Tokyo Institute of Technology, Yokohama 227, Japan **An improved dual-wavelength spectrophotometric assay for dopamine-beta-hydroxylase.** Biochemical Pharmacology (Oxford). 27(5):829-831, 1978.

An improved dual wavelength spectrophotometric assay for dopamine-beta-hydroxylase (DBH) is described. The method has higher sensitivity and reproducibility than a previously reported method and can be applied to any crude tissues of guinea-pigs or rats to measure the maximum velocity at saturated concentrations of substrate and cofactor under optimum conditions and complete inactivation of endogenous inhibitors. Even tissues with very low DBH activity, such as cerebral cortex, can be assayed by this method. DBH activity in any tissue containing noradrenergic neurons of guinea-pigs and rats can be measured by using 1-30mg of the tissues. 12 references.

001617 King, B.; Marsden, C. A. Kinson Ltd., 17 Wellington House, Eton Road, London NW3 4SY, England **Monitoring motor activity using doppler shift radar.** British Journal of Pharmacology (London). 64(3):471P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the use of doppler shift radar to analyze both the speed and the time pattern of bursts of motor activity is described. The activity monitor was able to distinguish two phases in the behavioral responses of rats to 5mg/kg intraperitoneal p-chloroamphetamine. The first phase began within 10 minutes of administration and consisted of increased fast and slow activity but very little burst activity (continuous body movements, head weaving, tremor). A marked increase in burst activity, indicating a typical highly spasmodic locomotive behavior was observed 50-70 minutes after injection, while total activity was still above normal. 2 references. (Author abstract modified)

001618 Knight, R. I.; Smith, I. R. Research Institute, Smith Kline & French Laboratories Ltd., Mundells, Welwyn Garden City, Herfordshire, England **Separation and quantification of metabolites of radiolabelled histamine in brain.** British Journal of Pharmacology (London). 64(3):460P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, a method for separation and quantification of radiolabeled histamine, imidazoleacetic acid, telemethylhistamine, and telemethylimidazoleacetic acid is described. The (14C)-labeled substance in artificial cerebrospinal fluid was injected into the right lateral ventricle via a cannula guide, and the rat was killed by cervical dislocation. The brain was rapidly removed, washed in saline, and homogenized in 0.6M perchloric acid containing 20mcg of each unlabeled carrier substance. The homogenate was centrifuged at 20000g for 10 minutes; the pellet was washed twice with water and all three supernatants combined. The combined supernatant was brought to pH6 with 3M aqueous potassium hydroxide, and the potassium perchloride was removed by centrifugation. The resulting supernatant was freeze dried and the residue redissolved in 10mM hydrochloric acid (750mcL) for chromatography. Chromatographic separation and quanitification of metabolites was done on silica gel thin layer chromatography plates. The silica gel was scraped off into a counting vial and counted in a scintillation fluid; the radioactivity in each vial was presumed to be due to the authentic standard substance with which it was co-chromatographic. 4 references. (Author abstract modified)

001619 Laird, Hugh E., II; Hermansen, James E.; Huxtable, Ryan J. Department of Pharmacology, College of Pharmacy, University of Arizona, Tucson, AZ 85721 **An electrode-cannula unit for intracerebral electrical stimulation, EEG recording and drug administration in small animals.** Pharmacology Biochemistry and Behavior. 10(3):429-431, 1979.

An inexpensive and reliable method for repeated administration of chemicals into selected regions of the brain, while simultaneously recording EEG activity or electrically stimulating the same area is described. The electrode/cannula unit can be easily constructed from readily available components. The unit has been used to determine intracerebral electroshock thresholds in rats, the anticonvulsant action of taurine after intracerebral injection, and EEG changes following electrical stimulation of the brain or intracerebral drug injection. 8 references. (Author abstract modified)

001620 Light, Kim Edward. Indiana University **Pharmacological aspects of acute and chronic antidepressant drug treatment on peripheral noradrenergic transmission, in vitro. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7730302, HC$15. MF$7.50. 148 p. 1977.

The isolated electrically stimulated rat epididymal fat pad system is proposed as a model for the investigation of antidepressant drug action. Various concentrations of the antidepressant drugs imipramine, desipramine, amitryptyline, nortriptyline, protriptyline, and doxepin were tested in vitro in preincubated and nonpreincubated fat pads taken from fed and 24 hour fasted rats. A variety of other compounds, including cocaine, theophylline, chlorpromazine, atropine, propranolol, and phentolamine, were also tested to characterize the adrenergic response system. Results demonstrate that nonstimulated glycerol output is a result of extrasympathetic influences, with a minor role possible for spontaneously released norephinephrine. Stimulated glycerol output is probably a result of norepinephrine activation of beta adrenergic receptors and the accumulation of 3',5'-cyclic adenosine monophosphate. The isolated electrically stimulated epididymal fat pad system appears to be a useful model for the study of antidepressant drug actions and for the investigation of molecular changes occurring with the delayed onset of therapeutic effect seen with the clinical use of these compounds. (Journal abstract modified)

001621 Pipkin, J. D.; Stella, V. J. Department of Pharmaceutical Chemistry, University of Kansas, Lawrence, KS 66045 **Thiamine whole blood pharmacokinetics in rats using both a specific 35S-thiamine liquid scintillation assay and the thiochrome fluorescence assay.** Journal of Pharmaceutical Sciences. 67(6):818-821, 1978.

A study of factors altering the CNS and gastrointestinal absorption of thiamine in rats necessitated the development of a specific assay for thiamine from 100microl samples of blood and plasma and small quantities of brain tissue. The specific thiochrome fluorescence assay for thiamine was modified to handle microsamples and to use 35S-thiamine. This sensitive and specific radioassay using 35S-thiamine gave pharmacokinetic parameters for 4mg/kg intravenous doses of thiamine in rats equivalent to those using the less sensitive thiochrome fluorescence assay. The new assay, because of its lower limit of detection, allowed the study of the time profile of thiamine after a 1mg/kg intravenous dose in rats. 29 references. (Author abstract)

001622 Ponzio, F.; Jonsson, G. Istituto di Recerche Farmacologiche Mario Negri, Via Eritrea, 62, I-20157 Milan, Italy **A rapid and simple method for the determination of picogram levels of serotonin in brain tissue using liquid chromatography with electrochemical detection.** Journal of Neurochemistry (Oxford). 32(1):129-132, 1979.

A rapid and simple technique using solvent extraction and high pressure liquid chromatography with electrochemical detection developed for the determination of serotonin in small animal brain tissue samples (1-20mg) is described. The method has a reasonably good specificity and a very low rate of experimental error. The recovery of authentic 5-hydroxytryptamine (5HT) added is 80-90%. The 5-HT levels of rat whole brain were found with the present technique to be 690 plus or minus 17.5ng/g and of mouse neocortex 304 plus or minus 16ng/g. Monoamine oxidase inhibition with pargyline (2H) increased 5-HT levels in mouse neocortex to 194 plus or minus 15% (N-5) of control, while reserpine depleted 5-HT to 13 plus or minus 4% of control. The method has a sensitivity level of about 20pg (0.1pmol) per brain sample. 20 references. (Author abstract)

001623 Reader, T. A. Centre de recherche en sciences neurologiques, Universite de Montreal, Montreal, Quebec, Canada **A simplified method of preparing and filling multibarreled glass microelectrodes.** Brain Research Bulletin. 3(6):719-720, 1978.

A simple and rapid method for constructing and filling multibarreled microelectrodes is described. The procedure requires no special skills and can be performed with a standard vertical microelectrode puller. In addition, the technique reduces glass blowing to a minimum. 4 references. (Author abstract modified)

001624 Schrijver, J.; Dias, T.; Hommes, F. A. Laboratory of Developmental Biochemistry, Department of Pediatrics, University of Groningen, School of Medicine, Groningen, The Netherlands **Studies on ATP: thiamine diphosphate phosphotransferase activity in rat brain.** Neurochemical Research. 3(6):699-709, 1978.

An attempt was made to demonstrate the synthesis of thiamine triphosphate (ThTP) in rat brain. When (2-14C-thiazole)thiamine was used for the synthesis of (14C)ThTP in fractions of rat brain, 14C radioactivity could be demonstrated in the ThTP fractions, even in the absence of an enzyme source. It is suggested that a complex is formed between (14C)thiamine and a phosphate ester that behaves chromatographically as ThTP. It is concluded that the present ATP/thiamine diphosphate phosphotransferase assay system for the measurement of ThTP synthesis is not suitable for diagnosis of Leigh's disease

(subacute necrotizing encephalomyelopathy). 30 references. (Author abstract modified)

001625 Sempik, J.; Wilson, J. Fisons Research and Development Laboratories, Bakewell Road, Loughborough, Leics, England **Cerebral perfusion in the dog.** British Journal of Pharmacology (London). 64(3):463P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, a modified method for cerebral perfusions in the dog is described. Using this method, cardiovascular responses to catecholamines injected into the cerebral circulation can be obtained which are not subject to interferences by effects on the systemic circulation. Intravenous injection of catecholamines produced only reflex changes in cerebral perfusion pressure in this preparation. 2 references. (Author abstract modified)

001626 Tallman, John F.; Thomas, John W.; Gallager, Dorothy W. Section on Biochemistry and Pharmacology, Biological Psychiatry Branch, NIMH, Bethesda, MD 20014 **Identification of diazepam binding in intact animals.** Life Sciences (Oxford). 24(10):873-879, 1979.

An in vivo method for labeling specific benzodiazepine (BDZ) binding sites in brain was developed, using intravenously injected tritiated diazepam. Labeling of the BDZ sites was blocked by pretreatment with high doses of pharmacologically active BDZs, but not by an inactive BDZ. Use of this binding technique revealed that specific BDZ binding was enhanced by pretreatment of male Sprague-Dawley rats with the gamma-aminobutyric acid (GABA) agonist muscimol or with amino-oxyacetic acid, which increases GABA levels in brain. 13 references. (Author abstract modified)

001627 Tilson, H. A.; Cabe, Patrick A. Laboratory of Behavioral and Neurological Toxicology, National Institute of Environmental Health Sciences, Research Triangle Park, NC 27709 **Assessment of chemically-induced changes in the neuromuscular function of rats using a new recording grip meter.** Life Sciences (Oxford). 23(13):1365-1370, 1978.

The effects of several psychoactive drugs on the grip strength of rats were evaluated by a new recording grip meter technique in conjunction with an inclined screen procedure. The lowest doses required to produce a significant decrease in grip meter scores by chlorpromazine (CPZ), chlordiazepoxide (CDZ), and phenobarbital (PHEN) were 5, 9, and 20 mg/kg respectively. d-Amphetamine (0.5-8 mg/kg) resulted in a significant dose related increase in grip meter scores. The lowest effective doses for CPZ and PHEN using the inclined screen test were 10 and 40 mg/kg, respectively. These values are two times the corresponding figures obtained in the grip meter test. The lowest effective dose for chlordiazepoxide was 9 mg/kg in the inclined screen, which is the same as that in the grip meter test, while d-amphetamine had no effect on neuromuscular function measured by the inclined screen. Relative to the inclined screen procedure, which measures a combination of factors, the grip meter technique appears to be a sensitive procedure capable of measuring forelimb grip strength selectively. 7 references. (Author abstract modified)

001628 Walsh, Michael J.; Silbergeld, Ellen K. Section on Technical Development, NIMH, Bethesda, MD 20205 **Rat rotation monitoring for pharmacology research.** Pharmacology Biochemistry and Behavior. 10(3):433-436, 1979.

An automated recording technique for monitoring rotational behavior in pharmacological studies is described. The technique measures only full turns and positively determines rotational direction. The count and direction data can be processed as mechanical counter inputs, computer inputs, time interval subtotals, summary totals, or voltage proportional to cumulative counts. This technique has been successfully used to determine the effect of opiates on nigrostriatal dopaminergic activity and to analyze the mechanisms and sites of action of opiate alkaloids and opioid peptides in modulating motor behavior. 10 references. (Author abstract modified)

001629 White, W. Frost; Nadler, J. Victor; Cotman, Carl W. Dept. of Neurosciences, Children's Hospital Medical Center, 300 Longwood Avenue, Boston, MA 02115 **A perfusion chamber for the study of CNS physiology and pharmacology in vitro.** Brain Research (Amsterdam). 152(3):591-596, 1978.

The design of a continuous perfusion apparatus that minimizes the problems without sacrificing the advantages of brain slice preparations is presented. Significant problems overcome with the use of this include tissue displacement resulting in a change in electrode position, slow or incomplete exchange of medium due to mixing, and maintenance of a constant fluid level within the chamber. The chamber consists of four functional subunits dealing with medium inflow, tissue support, medium outflow, and electrical ground. The utility of the perfusion setup is illustrated by experiments on the inhibition of synaptic transmission in hippocampal slices by Mg2. 11 references.

001630 Williams, Lewis Thomas. Duke University **Alpha and beta-adrenergic receptors: direct binding studies using radioactive ligands. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7731705, HC$15. MF$7.50. 209 p. 1977.

The feasibility of a more direct approach to the investigation of the interaction of adrenergic agents with receptor sites was tested. Radioactively labeled alpha-adrenergic and beta-adrenergic agents were used to label receptor binding sites in membrane preparations which are known to respond to adrenergic stimulation. The binding of each radioactive ligand was measured by incubating the ligand with a membrane preparation, followed by rapid filtration of the incubation mixture through glass fiber filters. Results demonstrate that alpha-adrenergic and beta-adrenergic receptors can be directly identified and studied using appropriate radioactively labeled adrenergic agents. These methods should provide a foundation for future detailed investigations of the structure, function, and regulation of alpha-adrenergic and beta-adrenergic receptors. (Journal abstract modified)

CLINICAL PSYCOPHARMACOLOGY

07 EARLY CLINICAL DRUG TRIALS

001631 Berkowitz, Jesse M. Dept. of Medicine, Nassau County Medical Center, East Meadow, NY 11554 **A clinical assessment of lorazepam in the treatment of anxiety associated with gastrointestinal symptomatology.** Journal of Clinical Psychiatry. 39(10, Section 2):46-52, 1978.

To assess the effectiveness of lorazepam on patients suffering from anxiety associated with gastrointestinal symptomatology, 70 subjects with these symptoms were tested with lorazepam or with placebo for a 4 week period. Results from analyses of Global, Hamilton, and 35 Item self-ratings indicate that lorazpam in 3mg/day doses produced a significantly greater decrease in anxiety symptoms than placebo at almost all evaluation periods. Side-effects were infrequent and usually controlled by dosage adjustment. Results indicate that lorazepam can be used to advantage as an adjunct in treatment of anxiety associated with gastrointestinal disorders. 23 references. (Author abstract modified)

001632 Caraceni, T. A.; Girotti, F.; Celano, I.; Parati, E.; Balboni, L. Instituto Neurologico ""C. Besta", Via Celoria 11, I-20133 Milan, Italy **2-dimethylaminoethanol (Deanol) in Huntington's chorea.** Journal of Neurology, Neurosurgery, and Psychiatry (London). 41(12):1114-1118, 1978.

The efficacy of 2-dimethylaminoethanol (Deano 1) in the treatment of Huntington's chorea was examined in nine patients characterized by varying degrees of hyperkinesia, dementia, and psychiatric disturbance. The use of dimethylaminoethanol, a possible precursor of brain acetykcholine, has been based on the hypothesis that there is a functional dopaminergic hyperactivity in this illness. Results indicate no useful psychopharmacological activity of the drug: in general there is no significant difference in hyperkinetic symptoms between basal conditions and active therapy or between drug treatment and placebo conditions, although significant improvements have been noted in four patients during haloperidol treatment. Possible reasons for these findings are discussed in reference to previous research. 29 references. (Author abstract modified)

001633 Cooper, Thomas B.; Simpson, George M.; Lee, Hillary; Bergner, Per-Erik E. Clinical Psychopharmacology Laboratory, Rockland Research Institute, Orangeburg NY 10962 **Evaluation of a slow-release lithium carbonate formulation.** American Journal of Psychiatry. 135(8):917-922, 1978.

A slow release lithium preparation was compared with a standard formulation in 11 normal volunteers and 12 volunteer patients already receiving prophylactic lithium therapy. Pharmacokinetic parameters of normal volunteers were examined after a single dose of each form and the steady state levels after a b.i.d. dose of the slow release form. These intital single dose date suggest that the two formulations are not bioequivalent. However, the area under the curve of the two forms was similar and the essentially complete recovery of lithium from urine in steady-state levels for the two formulations essentially confirmed the normals subjects data; with the slow release form, plasma lithium levels were slightly higher, and the postdose lithium level variability was decreased by as much as 50%. 15 references. (Author abstract)

001634 Dalla Rosa, V.; Kreiner, C. Reparto Lungodegenti Femminile dell'Ospedale Psichiatrico Provinciale di Brescia, Brescia, Italy **/Clinical experimentation with depamide in depressive syndromes./** Sperimentazione clinica della depamide nelle sindromi depressive. Lavoro Neuropsichiatrico (Roma). 62(1/2):103-111, 1978.

The therapeutic results obtained in dysthymic disorders with the use of a new drug, depamide (dipropylacetamide), are described. The existing literature on the use of the drug is reviewed. A study was conducted on 12 normal subjects to evaluate the psychotropic effects of depamide, and some specific actions of the drug were observed. The clinical evaluations, side-effects, and the study of a group of sample patients are described. The patients consisted of 20 female subjects with dysthymic disorders, many of whom were long-term patients in psychiatric institutions. While the limited number of cases treated with depamide does not allow for definitive conclusions to be made on the therapeutic efficacy of the drug, the excellent tolerability of depamide is reported. The drug appears to have positive therapeutic effect in cases of endogenous dysthymia, and also in neurotic deressions. 7 references. (Journal abstract modified)

001635 Finkel, Sidney. Lond Island Jewish Hospital, New Hyde Park, NY 11040 **Antianxiety effects of lorazepam in patients with cardiovascular symptomatology.** Journal of Clinical Psychiatry. 39(10, Section 2):35-40, 1978.

To assess the therapeutic potential of lorazepam in patients with anxiety associated with cardiovascular disorders, lorazepam was administered to 38 patients with moderate to severe anxiety, while a comparable control group of patients received placebo in a 4 week study. Average dosage was 3mg/day given as 2mg in the evening and 1mg in the morning. Results from the Global response, Hamilton Anxiety Rating Scale, and 35 Item Self-Rating Scale scores show lorazepam to be significantly more effective in relieving anxiety both clinically and statistically. Adverse reactions were transient and tolerable, and were reported in only 2 patients on lorazepam. 19 references. (Author abstract modified)

001636 Hart, William L.; Parmley, Loren F. University of California at Los Angeles Medical Center, Los Angeles, CA 90024 **The effect of lorazepam on hypertension-associated anxiety: a double-blind study.** Journal of Clinical Psychiatry. 39(10, Section 2):41-45, 1978.

To examine the effect of lorazepam on patients with significant hypertension and accompanying moderate to severe stress, 62 adults with these symptoms were medicated with lorazepam or with placebo for a 4 week period. Patients were assessed by seven cardiologists under double-blind conditions and the data from a Global Physician Rating, Hamilton Anxiety Scale, and Patient Self-Rating Scale were pooled. Results show that symptoms of anxiety were significantly relieved by lorazepam in comparison to placebo. Most lorazepam patients were controlled by 3mg/day and except for one patient, side-effects were mild and transient. 16 references. (Author abstract modified)

001637 Kyriakopoulos, Adrian A.; Greenblatt, David J.; Shader, Richard I. Clinical Research and Development, Wyeth Laboratories, Inc., Radnor, PA 19087 **Clinical pharmacokinetics of lorazepam: a review.** Journal of Clinical Psychiatry. 39(10, Section 2):16-23, 1978.

Past studies of the clinical pharmacokinetics of lorazepam, a 3-hydroxy, 1,4-benzodiazepine, are reviewed which indicate that it is rapidly absorbed, reaching peak concentrations in the blood proportional to the dose approximately 2 hours after oral administration. Blood levels decline thereafter, with an elimination

half-life or about 12 hours. Conjugation with glucuronic acid to form inactive lorazepam glucuronide is the major metabolic pathway. Seventy to 75% of the administered dose is excreted as the glucuronide conjugate in the urine. On multiple dose regimens, steady-state blood levels directly proportional to the daily dose occur within 2 to 3 days and are maintained after several months of continuous treatment. The active drug and the glucuronide conjugate are completely eliminated from the blood within 1 week following the last dose. 35 references. (Author abstract)

001638 McCurdy, Layton; Schatzberg, Alan F. Dept. of Psychiatry, Medical University of South Carolina, Charleston, SC 29403 **Studies with oral lorazepam in anxiety neurosis associated with depressive symptomatology.** Journal of Clincial Psychiatry. 39(10, Section 2):30-34, 1978.

In 12 studies undertaken under a common 4 week protocol, the efficacy of lorazepam compared with placebo in reducing the severity of moderate to severe anxiety in 264 patients having significant depressive symptomology was investigated. Results indicate that lorazepam gave generally better anxiety relief than placebo. In the majority of comparisons, the differences were statistically and clinically significant. No data was obtained evidencing significant toxicity in either treatment group. 17 references. (Author abstract modified)

001639 Molcan, J.; Vinar, O.; Pribyl, R.; Kolibas, E.; Caplova, T.; Heretik, A. Psychiatricka klinika FN, 800 00 Bratislava, Mickiewiczova 13, Czechoslovakia **/On the possibility of using nootropic drugs in clinical psychiatry./** K moznostiam pouzitia nootropnych latok v klinickej psychiatrii. Ceskoslovenska Psychiatrie (Praha). 74(2):52-60, 1978.

A controlled clinical trial aimed at following up the effects of piracetam was conducted using a group of patients with qualitative thought disorders of different etiologies. A double-blind test was used to examine the effects of piracetam, centrophenoxin, and placebo. Effects were measured by a battery of psychological tests and clinical evaluations. During the trial, all patients had basic biochemical and EEG changes monitored. Results showed that piracetam and centrophenoxin had an active psychotropic effect and belong in the group of nootropic drugs. Both proved to be effective in alleviating states of agitation, and in improving attention and short-term memory. Piracetam also improved intellectual performance, increasing initiative and alleviating manifestations of fatigue. The existence of differences in the two drugs' clinical effects is discussed, and the need for continued clinical evaluation is emphasized. 7 references. (Journal abstract modified)

001640 Pinosky, David G. Dept. of Psychiatry, University of Miami School of Medicine, Miami, FL 33136 **Clinical assessment of the safety and efficacy of lorazepam, a new benzodiazepine derivative, in the treatment of anxiety.** Journal of Clinical Psychiatry. 39(10, Section 2):24-29, 1978.

The antianxiety effect and the safety of lorazepam, a new benzodiazepine derivative, were evaluated in a 4 week double-blind study of 68 adult outpatients. Lorazepam, or a matching placebo, was administered at an average total daily dosage level of 3.1mg on a b.i.d. regimen. Results from the Global Scale, Hamilton Anxiety Scale, and Lipman/Rickels 35 Item Self-Rating Scale indicate that lorazepam is clearly superior to placebo in the treatment of neurotic activity and its related symptoms. There were no clinically significant changes in vital signs or laboratory values and only one side-effect, urinary retention, was reported. 8 references. (Author abstract modified)

001641 Richards, David J. Clinical Investigation Division, Wyeth Laboratories, Inc., Radnor, PA 19087 **Clinical profile of lorazepam, a new benzodiazepine tranquilizer.** Journal of Clinical Psychiatry. 39(10, Section 2):58-66, 1978.

Research on the efficacy, safety, and adverse experiences of lorazepam are reviewed in 123 studies involving 3520 patients. Most studies were double-blind and placebo controlled and the target symptom was anxiety associated with anxiety neuroses, gastrointestinal and cardiovascular disorders, moderate to severe depressive symptoms, or transient situational stress. Except in transient situational stress, where single doses were given, the dosage of lorazepam was usually 2 to 6mg/day given b.i.d. or t.i.d. Lorazepam was statistically and clinically significantly more effective than placebo in reducing practically all anxiety scores at time intervals as assessed by both physician and patient rated measures. 13 references.

001642 Ruelius, Hans W. Research Division, Wyeth Laboratories, Inc., Radnor, PA 19087 **Comparative metabolism of lorazepam in man and four animal species.** Journal of Clinical Psychiatry. 39(10, Section 2):11-15, 1978.

The metabolic disposition of lorazepam in man, dog, cat, rat, and miniature swine was compared. Except in the cat, absorption is rapid and in humans, nearly complete. Lorazepam glucuronide is the major metabolite in all species except in the rat, in which a dihydrodiol derivative is the main product of lorazepam biotransformation. Lorazepam glucuronide, which has no demonstrable CNS activity, is also present in the plasma of all species investigated. Concentrations of lorazepam in rat brain correlate well with those in plasma but are about three times higher. The urinary route of extinction predominates in man, dog, and miniature swine while in the rat, the bulk of the drug related material is eliminated via the feces as a consequence of biliary excretion. 33 references. (Author abstract)

001643 Stokes, David K. Family Practice Residency Program, Spartanburg General Hospital, 101 East Wood St., Spartanburg, SC 29303 **Lorazepam in anxiety associated with chronic enteritis and ulcerative colitis.** Journal of Clinical Psychiatry. 39(10, Section 2):53-57, 1978.

Using a common protocol, nine gastroenterologists assessed, in a 4 week period, the comparative antianxiety efficacy of lorazepam and placebo under double-blind conditions in 48 patients with moderate to severe anxiety associated with chronic enteritis and ulcerative colitis. The initial dose of lorazepam was 3mg/day. Results from pooled data of physician rated Global and Hamilton and patient rated 35 Item scales indicate that lorazepam produced a significantly greater improvement in symptoms related to anxiety associated with chronic enteritis and ulcerative colitis than did placebo. Side-effects were infrequent. Results indicate that in dosages of approximately 3mg/day, lorazepam is an effective agent in treatment of moderate to severe anxiety associated with chronic enteritis and ulcerative colitis. 12 references. (Author abstract modified)

001644 Verhoeven, Wim M. A.; van Praag, Herman M.; Botter, Pieter A.; Sunier, Armand; van Ree, Jan M.; de Wied, David. Department of Psychiatry, University of Utrecht, Utrecht, The Netherlands **(Des-Tyr1)-gamma-endorphin in schizophrenia.** Lancet (London). 1(8072):1046-1047, 1978.

Results of a study to test the hypothesis that (des-Tyr1)-gamma-endorphin (DT-gamma-E) bioavailability might be a factor in schizophrenia are reported in a letter to the editor. DT-gamma-E was administered to six schizophrenic inpatients who were partly or completely resistant to conventional neuroleptic drug therapy. Brief case reports for each of these patients are presented. All six patients showed distinct improvements when given DT-gamma-E, although the response was short lived in three. These preliminary findings suggest that DT-

gamma-E has a neuroleptic like activity and provide support for the hypothesis that altered endorphin homeostasis plays an etiological role in schizophrenia. Further controlled research is recommended.

08 DRUG TRIALS IN SCHIZOPHRENIA

001645 Clark, Mervin L.; Kaul, Pushkar N.; Whitfield, Lloyd R. University of Oklahoma Health Science Center, Oklahoma City, OK **Chlorpromazine kinetics and clinical response.** Psychopharmacology Bulletin. 14(3):43-45, 1978.

In a summary of a paper delivered at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, December 14-16, 1977, clinical response and steady-state chlorpromazine (CPZ), and chlorpromazine sulfoxide (SO) blood concentrations in schizophrenic patients were discussed with reference to a followup study of 13 CPZ treated patients and 7 controls. In the group treated with CPZ for 12 weeks, blood level changes induced by a single dose were found no longer to correlate with orthostatic changes, but continued to relate to sedation. Steady-state blood concentrations of CPZ and SO were not found to correlate with clinical response to any significant degree. Only the daily dose administered appeared to correlate with clinical response to a significant degree. The oral pharmacokinetics of CPZ in normals appeared to be best described by a two compartment linear model with lag time and zero-order absorption. 4 references.

001646 Deniker, Pierre. Hopital Sainte-Anne, 1 Rue Cabanis, F-75014 Paris, France **Impact of neuroleptic chemotherapies on schizophrenic psychoses.** American Journal of Psychiatry. 135(8):923-927, 1978.

The impact of neuroleptic chemotherapy on the control of the various forms of schizophrenia during the 25 years since the introduction of chlorpromazine is reviewed. The activities of the different types of compounds are related to the symptomatic and progressive forms of the psychosis, with an emphasis on the dual structure of the illness. Problems of drug efficacy, the need for new drug treatments, and methodological issues in research are discussed. 10 references. (Author abstract modified)

001647 Dotti, Andrea; Bersani, Giuseppe. Universita degli Studi di Roma, Rome, Italy **/Preliminary study on the use of depot flupentixol for maintenance therapy in chronic schizophrenia./** Studio preliminare sull'uso del flupentixene depot nella terapia di mantenimento della schizofrenia cronica. Rivista di Psichiatria (Roma). 13(1):58-68, 1978.

A study to verify the therapeutic action of depot flupentixol in the maintenance therapy of chronic schizophrenics is reported. A group of 11 patients treated with depot flupentixol was observed for 6 months; the course of the principal psychopathological factors of the group as a whole was studied, as well as the seriousness of psychotic symptoms in the individual subjects. The results obtained are significant regarding the efficacy of depot flupentixol in the maintenance therapy of chronic schizophrenics, and particularly in the prevention of relapses. 13 references. (Journal abstract modified)

001648 Falloon, I.; Watt, D. C.; Lubbe, K.; MacDonald, A.; Shepherd, Michael. Shepherd: Institute of Psychiatry, De Crespigny Park, Denmark Hill, London SE5 8AF, England **N-acetyl-p-amino-phenol (paracetamol, acetaminophen) in the treatment of acute schizophrenia.** Psychological Medicine (London). 8(3):495-499, 1978.

The hypothesis that schizophrenia is caused by the release of prostaglandin E into the hypothalamus and may sometimes be accompanied by an elevation of temperature was examined by a clinical trial of the prostaglandin E suppressant N-acetyl-p-amino-phenol (paracetamol, acetaminophen). Ten acute schizophrenic patients were included in a double-blind, crossover trial of paracetamol and a placebo, in which each treatment was given for a week. Regular 4 hourly temperatures were recorded in all these cases and in five nonschizophrenic patients for comparison. Findings provide no evidence that paracetamol mitigated the symptoms of schizophrenia. The temperatures of the schizophrenics were not elevated more than those of the controls. However, it is concluded that the number of cases used was too small for this finding to be conclusive. 12 references. (Author abstract)

001649 Friedhoff, Arnold J.; Miller, Jeannette C.; Weisenfreund, Jochanan. Millhauser Laboratories, Department of Psychiatry, New York University School of Medicine, 550 First Ave., New York, NY 10016 **Human platelet MAO in drug-free and medicated schizophrenic patients.** American Journal of Psychiatry. 135(8):952-955, 1978.

Platelet monoamine oxidase (MAO) activity was compared in drug free chronic and acute schizophrenic patients, medicated chronic schizophrenic patients, and normal controls. A significant decrement in MAO activity was found only in medicated chronic schizophrenic patients. The possible mechanism for these findings is discussed. 42 references. (Author abstract)

001650 Frigh, C. D.; Stevens, Marilyn; Johnstone, Eve C.; Crow, T. J. CRC Division of Psychiatry, Watford Road, Harrow, Middlesex HA1 3UJ, England **Skin conductance responsivity during acute episodes of schizophrenia as a predictor of symptomatic improvement.** Psychological Medicine (London). 9(1):101-106, 1979.

Skin conductance responses to a series of tones were measured in 41 patients during an acute episode of schizophrenia before they received treatment and after 4 weeks of treatment with either alpha-flupenthixol, beta-flupenthixol or placebo. Patients who did not habituate to the tones prior to treatment tended to show no symptomatic improvement during the course of treatment. Patients who habituated and also showed an acute onset of their current symptoms showed a marked improvement even without active medication. Skin conductance responsivity did not change with improvement in symptoms alone, but decreased in patients on active medication (alpha-flupenthixol). Nonhabituation of skin conductance and insidious onset were found to be independent predictors of poor outcome. It is suggested that these combined criteria may define a group of patients with particularly poor prognosis. 14 references. (Author abstract)

001651 Garver, David L.; Dekirmenjian, Haroutune; Davis, John M. Department of Psychiatry, University of Cincinnati, Cincinnati, OH 45221 **Phenothiazine red cell levels and clinical response.** Psychopharmacology Bulletin. 14(3):27-29, 1978.

In a summary of a paper delivered at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, December 14-16, 1977, red cell levels of phenothizine were discussed with reference to clinical response. It was found that central nervous system effects of the neuroleptic butaperazine (BPZ) correlate well with tissue concentrations of the drug as measured in red cells. Plasma levels of BPZ correlate less well with CNS effects. Studies in 24 schizophrenic and subchronic or chronic schizoaffective patients were described. It was concluded that red cell, rather than plasma, BPZ may better correlate with the quantity of free BPZ within the vascular system of different patients because the quantity of hemoglobin to which BPZ binds in 1ml of packed red cells is more con-

stant than the amount of BPZ binding proteins in 1ml of plasma from such subjects. 4 references.

001652 Gelenberg, Alan J. Department of Psychiatry, Massachusetts General Hospital, Boston, MA 02114 **Treating the outpatient schizophrenic.** Postgraduate Medicine. 64(5):48-54, 56, 1978.

A review of antipsychotic drug treatment for the schizophrenic patient shows that judicious use of these drugs and psychosocial support enables the schizophrenic to lead a stable, productive life in the community. Since antipsychotic drugs have become available for treatment of schizophrenia, other forms of biologic therapy, such as psychosurgery or convulsive therapy, are seldom required. The five classes of antipsychotic drugs are tabulated by nonproprietary name, trade name, potency, and chemical structure of representative agent. While antipsychotic drugs are usually effective against the most flagrant symptoms of psychosis they rarely improve the flat affect, social awkwardness, or apathy of the schizophrenic. Some side-effects of antipsychotics, such as sedation and anticholinergic effects, tend to be more annoying than serious; others, such as akathisia or Parkinsonian syndrome, may hinder therapy, while still others, such as tardive dyskinesia, may be serious. It is noted that until schizophrenia is ultimately understood, the skillful physician, assisted by well trained nurses, social workers, psychologists, and others, can help control psychosis, diminish pain, and increases the productivity of schizophrenic patients as they struggle to become functioning members of society. 4 references. (Author abstract modified)

001653 Goldstein, Leonide; Pfeiffer, Carl C. CMDNJ-Rutgers Medical School, Piscataway, NJ **Effects of single oral doses of trace elements on the quantitated EEG of normal subjects and chronic schizophrenics.** Psychopharmacology Bulletin. 14(3):55-57, 1978.

In a summary of a paper presented at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, December 14-16, 1977, the effects of single oral doses of trace elements on the EEGs of normal subjects and schizophrenic subjects were studied. A group of 24 normal male volunteers were administered the trace elements as a dietary supplement to a breakfast beverage, and EEGs were recorded 30 times successively over epochs of 2 seconds duration, and an equal number of epochs was recorded 4 hours postdrug. Data were compared to those for 17 chronic schizophrenic patients. Neither MnCl2 (10mg), Cr acetate (10mg), nor placebo produced any significant changes in normal Ss. ZnSO4 (50mg) produced an elevation of the coefficient of variation (CV) in those normals with an initially low CV. Copper produced a decline in CV only in those normals with an initially high CV. In chronic schizophrenics, zinc was the only element which produced a significant change. Results suggest that three of the trace elements studied produced effects which could be demonstrated objectively by quantitative EEG: zinc sulfate, copper, and (to a lesser extent) iron. 5 references.

001654 Goldstein, Michael J.; Rodnick, Eliot H.; Evans, Jerome R.; May, Philip R. A.; Steinberg, Mark R. Department of Psychology, University of California, Los Angeles, CA 90024 **Drug and family therapy in the aftercare of acute schizophrenia.** Archives of General Psychiatry. 35(10):1169-1177, 1978.

After a brief inpatient hospitalization, 104 acute, young (mean age 23.36 years) schizophrenics, stratified by premorbid adjustment, were randomly assigned to one of four aftercare conditions for a 6 week controlled trial. Conditions involved one of two dose levels of fluphenazine enanthate (1ml or 0.25ml) and presence or absence of crisis oriented family therapy. Relapses during the 6 week period and at 6 month followup were least in patients who received both high dose and family therapy (0%) and greatest (48%) in the low dose, no therapy group. Brief Psychiatric Rating Scale symptom ratings disclosed a significant family therapy effect at 6 weeks that was sustained at 6 months only for therapy patients originally receiving the high drug dose. Numerous interactions were found between premorbid adjustment status and response to the two treatment conditions. 18 references. (Author abstract)

001655 Gottschalk, Louis A. no address **A preliminary approach to the problems of relating the pharmacokinetics of phenothiazines to clinical response with schizophrenic patients.** Psychopharmacology Bulletin. 14(3):35-39, 1978.

In a summary of a paper delivered at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, December 14-16, 1977, a preliminary approach to the problems of relating the pharmacokinetics of phenothiazines to clinical response with schizophrenic patients was described. Three subgroups of 35 patients were studied, including 1) patients who respond favorably to hospitalization plus placebo during the first 6 days, 2) patients who respond to a single dose of phenothiazine, and 3) patients who respond favorably after several weeks of phenothiazine administration, in an attempt to differentiate between members of these subgroups during the first 2 days of hospitalization for schizophrenia. The frequency of use of various verbal categories from the Social Alienation-Personal Disorganization Scale was recorded. The use of specific discriminant function to differentially predict drug responders from nonresponders, not simply because of a single dose of phenothiazine, but on long-term, daily oral thioridazine was endorsed. The basis for the type of drug response was not the average or steady state drug plasma levels of the patients. 7 references.

001656 Gruen, Peter H.; Sachar, Edward J.; Altman, Norman; Langer, Gerhard; Tabrizi, Mary Ann; Halpern, Frieda S. Sacher: Department of Psychiatry, Columbia University College of Physicians and Surgeons, 722 W. 168th Street, New York, NY 10032 **Relation of plasma prolactin to clinical response in schizophrenic patients.** Archives of General Psychiatry. 35(10):1222-1227, 1978.

To determine if dopamine antagonism is a necessary condition for the antischozophrenic action of neuroleptics, morning prolactin and clinical symptomatology were measured in 15 schizophrenic patients before neuroleptic therapy, and after 3 and 6 weeks of high dose butaperazine or loxapine treatment. Prolactin levels were transiently elevated during the unmedicated admission period, probably reflecting a normal stress response. Prolactin increased in all patients during neuroleptic therapy. There was, however, no correlation between magnitude of prolactin changes and clinical response, probably because the prolactin response achieved a maximum at relatively low doses of neuroleptics. 41 references. (Author abstract)

001657 Johnson, D. A. W. University Hospital of South Manchester, West Didsbury, Manchester 20, England **Prevalence and treatment of drug-induced extrapyramidal symptoms.** British Journal of Psychiatry (London). 132:27-30, 1978.

A prospective followup of schizophrenic patients treated with depot neuroleptic injections demonstrated the variability of the prevalence rate of morbidity from drug induced extrapyramidal symptoms. Factors influencing this morbidity are discussed. It is noted that the need for the treatment of drug induced symptoms by the use of antiparkinsonian drugs is less than commonly accepted. It is suggested that our psychological set to the problem of drug induced side-effects requires revision, and in particular

that the prescription of anticholinergic drugs needs justification. 28 references. (Author abstract)

001658 Lapierre, Y. D. Ottawa General Hospital, 197 Cumberland St., Ottawa, Ontario, K1N 7H4, Canada **A controlled study of penfluridol in the treatment of chronic schizophrenia.** American Journal of Psychiatry. 135(8):956-959, 1978.

The comparative effects of penfluridol and fluphenazine in the outpatient treatment of chronic schizophrenics were studied. Twenty patients were treated with penfluridol and 21 with fluphenazine for a period of up to 1 year. Penfluridol, an oral neuroleptic administered weekly, was as efficacious as fluphenazine administered twice daily and appeared to be superior to fluphenazine in improving emotional withdrawal and anergia. The low incidence of side-effects and other signs of toxicity, coupled with an effective prophylactic activity, suggests that penfluridol is an important addition to the therapeutic armamentarium for the treatment of chronic schizophrenia. 5 references. (Author abstract modified)

001659 MacCrimmon, D. J.; Saxena, B.; Foley, P.; Grof, P. Department of Research Services, Hamilton Psychiatric Hospital, PO Box 585, Hamilton, Ontario L8N 3K7, Canada **Fluphenazine decanoate and fluphenazine enanthate in the out-patient management of chronic schizophrenia.** Neuropsychobiology (Basel). 4(6):360-365, 1978.

Fluphenazine decanoate (FD) and fluphenazine enanthate (FE) were compared in terms of therapeutic efficacy, duration of action, and incidence of side-effects. Thirty nine chronic schizophrenic outpatients were given either FD or FE for a 1 year double-blind trial. Doses of 25mgs were given for the first 6 months, and doses of 37.5mgs were given for the last 6 months. agents the intervals between treatments lengthened significantly over the course of the trial. FD showed a nonsignificant trend for longer duration of action coupled with a significantly lower incidence of extrapyramidal side-effects. Results indicate comparable therapeutic effectiveness for the two fluphenazines in terms of Brief Psychiatric Rating Scale scores and rehospitalization rates. 7 references. (Author abstract modified)

001660 Nasrallah, Henry A.; Rivera-Calimlin, Leonor; Rogol, Alan D. Department of Psychiatry, University of California at San Diego, La Jolla, CA 92037 **Fluphenazine decanoate: plasma concentrations and clinical response.** Psychopharmacology Bulletin. 14(3):46-47, 1978.

In a summary of a paper delivered at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, December 14-16, 1977, the plasma concentration and clinical response of patients administered fluphenzine decanoate were studied. Plasma fluphenazine and prolactin concentrations were measured by gas liquid chromatography and radioimmunoassay, respectively, at 0, 1, 3, 6, and 24 hours, and thereafter once daily for 2 weeks following an intramuscular dose of 50mg fluphenazine decanoate in ten chronic schizophrenic patients. Psychopathology was rated on the NIMH Inpatient Behavioral Rating Scale. There were wide intrapatient and interpatient variations in plasma fluphenazine concentrations over the 15 day study period, whereas plasma prolactin concentrations were consistently elevated throughout the study. No significant clinical change was noted in any of the patients. 5 references. (Author abstract modified)

001661 Nestoros, J. N.; Ananth, J. V.; Caille, G. Allan Memorial Institute, 1025 Pine Ave. West, Montreal, Quebec, Canada **A patient with resistance to neuroleptics: a genetic trait?** Psychiatric Journal of the University of Ottawa (Ottawa). 3(4):243-244, 1978.

A case of an Eskimo patient diagnosed schizophrenic, who showed no therapeutic response and no side-effects, in spite of very high plasma levels of chlorpromazine, is presented. It is suggested that resistance to neuroleptics may be genetically determined and that nonresponders may have high plasma levels associated with negligible amounts of metabolites. 7 references. (Author abstract)

001662 Potkin, Steven G.; Gillin, J. Christian; Rogol, Allan; Nasrallah, Henry A.; Wyatt, Richard Jed. Laboratory of Clinical Psychopharmacology, Saint Elizabeths Hospital, Washington, DC 20032 **Baclofen: lack of effect on human plasma prolactin.** Communications in Psychopharmacology. 2(4):297-300, 1978.

The administration of 1.5mg/kg baclofen to seven male chronic schizophrenic patients failed to produce a change in their plasma prolactin levels. Baclofen is believed to act as a gamma-aminobutyric acid (GABA) agonist; GABA inhibits the firing of dopaminergic neurons, and dopaminergic inhibition in the hypothalamus is generally reflected in a commensurate increase in plasma prolactin. Therefore, the baclofen did not alter dopamine metabolism in these schizophrenic patients. 21 references. (Author abstract modified)

001663 Rivera-Calimlim, Leonor; Gift, Tom; Nasrallah, Henry A.; Wyatt, Richard Jed; Lasagna, Louis. Department of Pharmacology, University of Rochester School of Medicine and Dentistry, Rochester, NY 14642 **Correlation between plasma concentrations of chlorpromazine and clinical response.** Communications in Psychopharmacology. 2(3):215-222, 1978.

The relationship between plasma concentrations of chlorpromazine (CPZ) and clinical improvement was studied in 46 acute schizophrenic patients. Response to drug therapy was measured by the Brief Psychiatric Rating Scale (BPRS) and BPRS scores at 3 weeks were the dependent variable. Independent variables were: mean CPZ plasma concentrations, hospital, chronicity of illness, daily CPZ dose, and preadmission BPRS scores. Analysis of the total BPRS with covariates showed that chronicity and admission scores are not important as predictors of change in total BPRS, whereas plasma CPZ concentration is a good predictor and shows a significant negative correlation with total BPRS score. When all covariates were held constant, an increase in the mean plasma level of CPZ resulted in a predicted decrease in the third week BPRS score, thought disorder, and paranoid hostility. Admission scores were good predictors of the thought disorder, paranoid hostility, and depression scores after 3 weeks of treatment. The statistical analysis strengthens the hypothesis that clinical improvement is correlated with CPZ plasma level. 9 references. (Author abstract)

001664 Rotrosen, John; Angrist, Burton; Clark, Cathy; Gershon, Samuel; Halpern, Frieda S.; Sachar, Edward J. Neuropsychopharmacology Research Unit, Department of Psychiatry, New York University Medical Center, 550 First Ave., New York, NY 10016 **Suppression of prolactin by dopamine agonists in schizophrenics and controls.** American Journal of Psychiatry. 135(8):949-951, 1978.

Prolactin levels were assessed in plasma samples obtained before and after administration of apomorphine or L-Dopa to otherwise unmedicated chronic schizophrenic patients or control subjects. Basal prolactin levels did not differ in these two groups. Suppression of prolactin levels after each dopamine agonist was highly significant. Suppression in schizophrenics was slightly less than in controls following apomorphine, and slightly greater following L-Dopa. The implications of these findings are discussed and the limitations of the prolactin regula-

tory system as an index of dopamine agonist sensitivity are noted. 20 references. (Author abstract)

001665 Schulz, S. Charles; van Kammen, Daniel P.; Sternberg, David E.; Alexander, Paul F.; Bunney, William E. NIMH, Bethesda, MD 20014 **Antipsychotic effects of GHB in schizophrenia. (Unpublished paper).** Bethesda, MD, NIMH, 1978. 1 p.

A double-blind clinical and biochemical evaluation of GHB in schizophrenia is reported. GHB, a 4 carbon compound found naturally in human brain, has been used as an anaesthetic agent. GHB decreases the firing rate of dopamine neurons and has been shown to increase synthesis in the nigrostriatal pathway in animal studies. Seven volunteers, three males and four females betweeen the ages of 18 and 34, were administered GHB 5 times daily in equally divided doses in a placebo controlled design. Patients had been ill from 1-54 years; six were diagnosed schizophrenic and one schizoaffective. Patients were rated using the Bunney-Hamburg global ratings for psychosis, depression, and mania. Two patients became symptom free for the first time in 2 years. A third showed some improvement, and the other patients worsened or had no change in psychosis ratings. Depression or mania did not change significantly except in one patient who had became activated and sexually aroused. (Author abstract modified)

001666 Sternberg, David E.; van Kammen, D. P.; Lake, C. R.; Ballenger, J. C.; Bunney, W. E. NIMH, 9000 Rockville Pike, Bethesda, MD 20014 **CSF norepinephrine in schizophrenia. (Unpublished paper).** Bethesda, MD, NIMH, 1978. 2 p.

A report of cerebrospinal fluid (CSF) norepinephrine (NE) in schizophrenic patients is presented. Twenty six patients diagnosed schizophrenic and 26 normal controls were rated on a daily psychosis rating scale. NE and CSF concentrations of the NE metabolites were measured using a highly sensitive radioenzymatic assay. Schizophrenic patients had significantly higher baseline levels of NE in CSF than controls. NE levels decreased in all patients during pimozide treatment. The pimozide induced decrease in NE levels showed a significantly positive relationship to the change in psychosis when on chronic pimozide. The finding of a consistent decrease in NE levels with chronic pimozide and the significant relationship of its decrease to pimozide's effect on psychosis considered to warrant further research on the NE system in schizophrenia. 2 references. (Author abstract modified)

001667 Watt, David C. St. John's Hospital, Stone, Aylesbury HP17 8PP, England **Maintenance drugs for schizophrenia.** Lancet (London). 2(8098):1045-1046, 1978.

The merits of oral versus injected treatment in the aftercare of schizophrenics were investigated. Schizophrenics, treated for the acute phase of their illness, were randomly allocated to one daily oral pimozide plus an injected placebo or to injected fluphenazine plus an oral placebo. No difference was found between treatments in the number or rate of relapses or in drug defaulting. At the onset of the trial, side-effects and their associated discomfort were similar in the two treatment groups but they were significantly less at 1 year in the group having oral treatment. Patients having oral drugs were significantly less impaired than those on the injected preparations in respect to sociability, leisure interests, and function as a housewife and parent. The reduction in side-effects on the oral preparation is attributed to patients' adjustment of their own tablet dosage.

09 DRUG TRIALS IN AFFECTIVE DISORDERS

001668 Abgrall, Jean-Marie, Mejean, Christian. Centre Psychotherapique du Var, F-83000 Pierrefeu (Var), France /**Benefits of the thymoanaleptic agent, nortriptyline, in psychiatric practice.**/ interet en pratique psychiatrique d'un thymo-analeptique: la nortriptyline. Psychologie Medicale (Paris). 10(6):1173-1183, 1978.

The activity of nortriptyline in conventional cases of depression as well as in less usual indications, such as toxicomania and psychotic states, was studied. Nortriptyline was selected because it seemed to produce few side-effects, yet was still effective. Twenty seven subjects, seven inpatients and twenty outpatients from 18 to 63 years of age received an average dose of 100mg daily. An analysis of the results showed improvement in 67% of the patients; these results were substantiated with the Hamilton Scale. The very mild side-effects that were produced allowed treatment to be carried out safely on an ambulatory basis, especially since no anxiety symptoms developed when inhibition was lifted. It is felt that the beneficial effects on psychotics deserves to be studied further. 43 references. (Journal abstract modified)

001669 Banki, Csaba M. Country Neuropsychiatric Institute, H-4321 Nagykallo, Pf: 18., Hungary **Clinical observations with pizotifene (Sandomigran) in the treatment of nonmigrainous depressed women.** Archiv fur Psychiatrie und Nervenkrankheiten (Berlin). 225(1):67-72, 1978.

To evaluate a presumed antidepressant action of pizotifene a group of 52 nonmigranious depressed women were treated with a dosage of 3-6mg/day Sandomigran-Sandoz. The Bunney-Hamburg behavior rating scale was used to quantify the results. Thirteen patients showed marked improvement and 22 patients showed partial improvement after three weeks of treatment. Involutional and psychoreactive depressed patients responded better than endogenous depressed patients. Patients with symptoms of anxiety and dysphoria responded significantly more favorable than than those with retardation or paranoia. No serious side-effects were observed. 35 references. (Author abstract modified)

001670 Beresewicz, Maria; Klosiewicz, Lucja. Instytut Psychoneurologiczny, Al. Sobieskiego 1/9, 02-957 Warsaw, Poland /**Complications occurring in the course of treatment with lithium salts as a reason for interrupting treatment.**/ Powiklania w przebiegu leczenia solami litu jako przyczyna przerwania kuracji. Psychiatria Polska (Gdansk). 12(3):397-401, 1978.

One hundred eighteen patients undergoing lithium therapy for a 5 year period were studied for complications which had led to interrupting lithium salt administration. Complications occurred in about 20% of the patients, which involved for the most part circulatory problems. Complications occurred both when lithium was administered alone, or in combination with other psychotropic drugs. Other complications included thyroid hypofunction with symptoms of myxoedema, neurotoxic symptoms, or cutaneous conditions. 13 references. (Journal abstract modified)

001671 Beresewicz, Maria; Klosiewicz, Lucja. Instytut Psychoneurologiczny, Al. Sobieskiego 1/9, 02-957 Warsaw, Poland /**Some causes of failure of lithium therapy in the prophylaxis of affective disorders.**/ Niektore przyczyny niepowodzen stosowania soli litu w profilaktyce chorob afektywnych. Psychiatria Polska (Gdansk). 12(3):391-396, 1978.

Some causes for the failure of lithium therapy in the prophylaxis of affective disorders were examined in 118 patients who had undergone lithium treatment for 5 years: 76 of these patients were suffering from bipolar affective disorders, 36 from schizoaffective psychosis. Treatment was interrupted for 55 patients. Analysis of the causes for therapeutic failure showed that 30% of the patients had been ordered by their physician to interrupt treatment, while nearly 20% had interrupted on their own, more often those with schizoaffective psychosis. In 17 cases, at-

tempts were made to restore lithium treatment. Several of these patients have continued treatment. Psychological strains and risk of toxic effects for patients on prolonged courses of treatment with lithium are discussed. 10 references. (Journal abstract modified)

001672 Brambilla, Francesca; Smeraldi, Enrico; Sacchetti, Emilio; Negri, Fiammetta; Cocchi, Daniela; Mueller, Eugenio E. Mueller, Department of Pharmacology, University of Milan, Via Vanvitelli 32, I-20129 Milan, Italy **Deranged anterior pituitary responsiveness to hypothalamic hormones in depressed patients.** Archives of General Psychiatry. 35(10):1231-1238, 1978.

Abnormal anterior pituitary (AP) responsiveness to acute administration of thyrotropin releasing hormone (TRH) and luteinizing hormone follicle stimulating hormone releasing hormone (LHRH) was investigated in 14 patients (2 men and 12 women) suffering from primary affective disorders. In ten, TRH, 500mcg given intravenously, induced a rise in plasma growth hormone (GH) level, while in eight patients it induced a rise in plasma levels of follicle stimulating hormone (FSH) of LH or both. When LHRH, 150mcg, was administered intravenously to 10 patients, it induced a rise in plasma GH level in one patient and increased plasma prolactin level in three patients. Collectively, in only 3 of 14 patients was conventional AP responsiveness to hypothalamic neurohormones present. These findings demonstrate the existence of a profound derangement of AP responsiveness to hypothalamic neurohormones in depressed patients and suggest that a primary alteration in the physiologic links between the central nervous system and the AP may be at the origin of the neuroendocrine disturbance. 41 references. (Author abstract)

001673 Brodie, N. H.; McGhie, R. L.; O'Hara, J.; O'Hara, H.; Valle-Jones, J. C.; Smith, S. M. O'Hara, J.: St. Dunstan's Hospital, Brighton, England **Butriptyline in the treatment of depression: a multicentre general-practice trial.** Practitioner (London). 221(1321):128-130, 1978.

A double-blind trial of butriptyline versus amitriptyline was conducted for the treatment of depression in patients of five general practitioners. Patients had mild or moderate depression, with or without accompanying anxiety, in whom tricyclic antidepressant therapy was not contraindicated. Three rating scales were used in assessment, with the Leeds Self-Rating Scale proving an effective replacement for the more complex Hamilton Rating Scale for Depression. Butriptyline was as effective as amitriptyline in treatment, produced significantly less drowsiness, and reduced the total symptom score approximately 70% over the 6 week treatment period. 14 references.

001674 Calvani, Menotti; Nava, Demitrio; Fonelli, Antonio; Le Pera, Giorgio; Pirelli, Francesco. Clinica S. Rita, Rome, Italy / **The use of L-5-OH-tryptophan in depressive syndromes: a preliminary study./** Impiego dell'L-5-OH-triptofano nella sindrome depressiva: studio preliminare. Lavoro Neuropsichiatrico (Roma). 62(1/2):183-190, 1978.

The clinical use of 5-OH-tryptophan in the treatment of depressive syndromes was investigated. The usefulness of employing 5-OH-tryptophan instead of tryptophan has been evaluated in other research. A clinical study was made of 20 patients with previous monopolar depressive episodes, who had been treated with shock therapy. An initial dose of 300mg of L-5-OH-tryptophan was administered, subdivided into three administrations, to which was added the same drugs which in earlier treatments had no result. Clinical evaluation was made by means of Hamilton's scale. Results proved positive in 12 out of the 20 patients examined. The first parameters to improve were those connected with sleep, while most resistant to improvement were those connected with somatic aspects of anxiety, which in some patients appeared to worsen in the first days. 12 references.

001675 Chambers, C. A.; Naylor, G. J. Royal Dundee Liff Hospital, By Dundee, Scotland **A controlled trial of L-tryptophan in mania.** British Journal of Psychiatry (London). 132:555-559, 1978.

A clinical trial of the effects of L-tryptophan in the treatment of mania is reported, and a discussion of conflicting literature regarding the efficacy of the drug is presented. A double-blind placebo controlled trial of L-tryptophan, with pyridoxine and ascorbic acid, was carried out in 10 female patients suffering from mania. In contrast to earlier studies led by Prange and Murphy, L-tryptophan was found to be no better than placebo. 19 references. (Author abstract modified)

001676 Checkley, S. A. Institute of Psychiatry, De Crespigny Park, Denmark Hill, London SE5 8AF, England **Corticosteroid and growth hormone responses to methylamphetamine in depressive illness.** Psychological Medicine (London). 9(1):107-115, 1979.

The responses to methylamphetamine of a group of patients with endogenous depression were compared with the responses of a group of patients with other functional psychoses, a group of patients with reactive depression, and a group of patients with other psychiatric diagnoses. The results indicate impaired corticosteroid responses to methylamphetamine, but unaltered growth hormone responses. Results support the hypothesis that there is a functional deficiency of noradrenaline at some central alpha-adrenergic receptors. 53 references. (Author abstract modified)

001677 Coryell, William. Department of Psychiatry, University of Iowa College of Medicine, 500 Newton Rd., Iowa City, IA 52242 **Intrapatient responses to ECT and tricyclic antidepressants.** American Journal of Psychiatry. 135(9):1108-1110, 1978.

The therapeutic effectiveness of electroconvulsive therapy (ECT) and tricyclic antidepressants was compared. Medical records of 15 patients who had been treated with each of the methods during separate depressive episodes were studied. Responses to ECT treatment episodes were significantly better than responses to antidepressant therapy. It is concluded that a within individual comparison yields results that support the superior effectiveness of ECT over the tricyclics. The difficulty of obtaining a sufficiently large and unbiased sample is cited. 3 references.

001678 Crocq, L.; Benoist, P.; Boule, J.; Carof, J.; Cron, M.; Digo, R.; Etchegaray, B.; Kulik, J.; Maleysson, M.; Pagot, R. Laboratoire de Psychologie Pathologique de la Sorbonne, 18, rue de la Sorbonne, F-75005 Paris, France /**Sinequan in the treatment of severe depressive disorders. Multicentered clinical trials verified by the Clinical Observation Scale (COS)./** Le Sinequan dans le traitement des etats depressifs severes. Essais cliniques multi-centres controles par l'Echelle d'Observation Clinique ""E.O.C." Psychologie Medicale (Paris). 10(6):1147-1162, 1978.

The effects of Sinequan in the treatment of severe depressive disorders were assessed in a multicenter trial. Sixty nine psychotic and neurotic patients from eight hospitals were involved. The trial was carried out according to a specially designed procedure using a clinical observation scale (COS) which allows quantitative measurement of 20 groups of clinical symptoms of depression. Sinequan was administered in doses of 250 to 300mg per day which was reached in 4 days by gradual increase and was injected intramuscularly the first week and taken orally thereafter. Overall results (clinical observation and ratings on

the COS) were satisfactory in 60 out of 69 cases. Differential processing of diagnosed groups showed that the best results were obtained with reactive depression, anxious depression, and psychotic depressive disorders such as involutional depression and manic-depressive reactions. Differential processing according to clinical symptoms evidenced the three features of Sinequan: antidepressant, antianxiety and sedative activity with no influence on hypochondria or the neurotic characteristics of the patient. Sinequan was well tolerated, biologically and clinically, even in the elderly patient. The observed side-effects (such as drowsiness and dry mouth) were insignificant and subsided rapidly. 12 references. (Journal abstract)

001679 Dunner, David L.; Meltzer, Herbert L.; Fieve, Ronald R. New York State Psychiatric Institute, 722 West 168th St., New York, NY 10032 **Clinical correlates of the lithium pump.** American Journal of Psychiatry. 135(9):1062-1064, 1978.

In a revised version of a paper presented at the 130th Annual Meeting of the American Psychiatric Association held in Toronto, Ontario, May 1977, clinical correlates of the lithium pump are discussed. The active efflux of lithium from erythrocytes, expressed as the rate constant k-o was studied in patients with primary affective disorder and in controls. The data suggest that k-o is stable within individuals over time, is inhibited during treatment with lithium carbonate, and may be a good index of lithium toxicity. There is a significant correlation with k-o and the lithium erythrocyte/plasma ratio but is seemingly not related to age, sex, or affective disease subtype. Preliminary data suggest that k-o may be determined, at least in part, by a genetic factor. 7 references. (Author abstract modified)

001680 Ehrlich, Barbara E.; Diamond, Jared M.; Gosenfeld, Lawrence; Kaufman-Diamond, Sharon. Department of Physiology, UCLA School of Medicine, Los Angeles, CA **Lithium, membranes, and manic-depressive illness.** Psychopharmacology Bulletin. 14(3):21-22, 1978.

In a summary of a paper delivered at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan in December 14-16, 1977, the mechanisms of lithium in the control of manic-depressive illness were described with reference to recent research involving movement of lithium across red blood cell membranes. An ultramicro method of lithium analysis based on flameless atomic absorption spectrophotometry was developed. This method is 100,000 times more sensitive than standard methods. With this method, the lithium transport can be apportioned among the four flux mechanisms involved in Li movement across the red blood cell membrane. Findings involving monozygotic twins suggest that dose schedule as well as dose size influence both plasma Li fluctuations and Li ratios. It was concluded that exposure to lithium therapy seems to affect lithium transport. 4 references.

001681 Faltus, F.; Janeckova, E.; Mala, H. 128 21 Praha 2, Ke Karlovu 11, Czechoslovakia /**A comparison of the antidepressive effects of danitracene and imipramine.**/ Srovnani antidepresivniho ucinku danitracenu a imipraminu. Ceskoslovenska Psychiatrie (Praha). 74(2):61-66, 1978.

The effects of danitracene (WA 335 THOMAE), a new antidepressant of tetracyclic structure, and the tricyclic antidepressant, imipramine, were compared in their effect on endogenous, involutional, reactive and neurotic depressives. Subjects (n=118) were administered one of the two drugs and their mental state was followed up using standard questionnaires. Routine laboratory investigations and tests for toxicity were made. Both drugs were shown to possess a powerful antidepressive effect with no significant differences between the two. Doses of danitracene were lower, 3 to 6mg per day, and its tolerance was good with no cardiotoxicity or other undesirable side-effects. It is thought that these qualities make this drug suitable for use in geriatric psychiatry, as well as for use with cardiac patients and others with somatic disease. (Journal abstract modified)

001682 Fieve, Ronald R.; Meltzer, Herbert L.; Dunner, David L.; Fleiss, Joseph L. Department of Internal Medicine, New York State Psychiatric Institute, New York, NY **Lithium pump repression as an indicator of prophylactic response.** Psychopharmacology Bulletin. 14(3):22-24, 1978.

In a summary of a paper delivered at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, December 14-16, 1977, lithium pump repression was discussed as an indicator of prophylactic response to chronic lithium ingestion. Thirty eight bipolar manic-depressive subjects, rigorously screened to meet criteria for primary affective disorder, were clinically observed for 24 months while administered lithium alone or lithium plus antidepressants. A quantitive morbidity score was constructed, based on the mean deviation from normothymia on the global consensus rating. It was found that there was no association between response and either plasma level or dose. Pump repression and clinical response were positively correlated whether response was measured quantitatively or qualitatively. It was concluded that the lithium pump may be a useful biochemical marker in predicting lithium responsiveness in bipolar patients. 12 references.

001683 Frazer, Alan; Mendels, Joe; Brunswick, David; London, Jack; Pring, Martin; Ramsey, T. Alan; Rybakowski, Janusz. Affective Diseases Research Unit, Veterans Administration Hospital, University and Woodland Avenues, Philadelphia, PA 19104 **Erythrocyte concentrations of the lithium ion: clinical correlates and mechanisms of action.** American Journal of Psychiatry. 135(9):1065-1069, 1978.

In a revised version of a paper presented at the 130th Annual Meeting of the American Psychiatric Association, held in Toronto, Ontario, May 1977, research results and methodological issues involving erythrocyte concentrations of the lithium ion are discussed. It is asserted that when lithium carbonate is administered to individuals, there is considerable intersubject variation in the extent of accumulation of Li by erythrocytes. The primary reason for this is differences in the activity of a Li-Na counterflow system, which, under clinical conditions, removes Li from the cell. It appears that some bipolar patients accumulate more Li in their red cells than either unipolar depressives or normal controls. precise clinical characteristics of the bipolar patients who accumulate relatively large amounts of erythrocyte Li need to be clarified in future research. It is concluded that the measurement of red cell concentrations of Li, in addition to the usual plasma measurement, can be used as an indicator of patient compliance. 40 references. (Author abstract modified)

001684 Frazer, Alan; Mendels, Joe; Brunswick, David. Affective Diseases Research Unit, Veterans Administration Hospital, Philadelphia, PA **Erythrocyte concentrations of the lithium ion: clinical correlates and mechanisms of accumulation.** Psychopharmacology Bulletin. 14(3):14-16, 1978.

In a summary of a paper presented at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, December 14-16, 1977, erythrocyte concentrations in the lithium ion were discussed with reference to clinical correlates and mechanisms of action. Of 36 depressed patients studied, the 24 patients who responded to lithium carbonate had a mean lithium ratio virtually identical to that of those who did not respond. The distinction between unipolar and bipolar affective illness is discussed as a possible explanation for the discrep-

ancies between these and previously reported results. 28 references.

001685 Garver, David L.; Davis, John M. Department of Psychiatry, Pritzker School of Medicine, University of Chicago, Chicago, IL **Biogenic amine hypothesis of affective disorders.** Life Sciences (Oxford). 24(5):383-394, 1979.

The psychopharmacological and psychobiological evidence supporting the biogenic amine hypothesis of affective disorders is reviewed. Studies in some patients with affective disorders have revealed altered levels of urinary or cerebrospinal fulid metabolites of certain centrally acting amines. Neuroendrocine studies and experiments with pharmacologic agents with known effects on central amines have also suggested that abnormalities of central aminergic systems may exist in affective disorders. Present evidence generally supports the aminergic hypothesis of affective disorders, which state that some depressive disorders are associated with and may be the result of deficiencies in central catecholamine or indoleamine neurotransmission. Some lines of evidence suggest that mania may be accompanied by an increase in catecholamine activity. 112 references. (Author abstract modified)

001686 Haffke, Ernest A.; Rajendran, Somasundaram; Egan, John D. Nebraska Psychiatric Institute, 602 South 45th St., Omaha, NE 68106 **Dialysis, depression, and antidepressants.** Journal of Clinical Psychiatry. 39(10):759-760, 1978.

The treatment of depression occurring in patients undergoing chronic renal dialysis is discussed. The study was conducted on a dialysis unit where 10 Travenol dialysers of the recycling single bypass type are used to maintain a total of 22 patients. Imipramine in the usual dose range and schedule was used when an antidepressant was indicated. It is suggested that physicians working with dialysis patients should be aware of the high risk of serious depression, and respond decisively to treat these symptoms. 15 references. (Author abstract modified)

001687 Halaris, Angelos E.; DeMet, Edward M. Department of Psychiatry, University of Chicago, Chicago, IL 60637 **Noradrenaline metabolism in a manic-depressive patient.** Lancet (London). 1(8065):670, 1978.

Changes in plasma 3-methoxy-4-hydroxphenylglycol (MHPG) in a manic-depressive patient, which illustrate the usefulness of an improved gas chromatographic technique for the determination of MHPG in human plasma, are described. The patient's clinical status and MHPG results are summarized. The case report show that the control of manic behavior by an agent other than lithium was not paralleled by a concurrent return to normal noradrenaline metabolism. It is suggested that stabilization of manic behavior may be necessary before the biochemical aberration in MHPG levels is corrected. The time lag between return to normal behavior and lowering of plasma MHPG levels remains to be explained, but the report supports the existence of a link, as yet ill understood, between noradrenaline metabolism and manic depressive illness, and it demonstrates the value of plasma MHPG measurement. 3 references.

001688 Hendler, Nelson; Leahy, William. Mensana Clinic, Greenspring Valley Road, Stevenson, MD 21153 **Psychiatric and neurological sequelae of infectious mononucleosis.** American Journal of Psychiatry. 135(7):842-844, 1978.

Psychiatric and neurologic sequelae of infectious mononucleosis are described in two adolescent cases. Depression, incoordination, a reduction in intellectual ability, and altered EEG patterns were found in two patients; one recovered and the other seemed to have permanent residual effects. The possibility of tranylcypromine as a treatment for the depression and appropriate counseling of patient and family are discussed. 28 references. (Author abstract)

001689 Hollister, Leo E. Department of Medicine, Veterans Administration Hospital, Palo Alto, CA 94304 **Tricyclic antidepressants (first of two parts).** New England Journal of Medicine. 299(20):1106-1109, 1978.

The use of tricyclic antidepressants in clinical medicine is discussed, with emphasis on their chemical composition, pharmacologic action, metabolism, and kinetics. Current evidence which questions the amine hypothesis of depression is briefly reviewed, along with the possibility that research may lead to biochemical tests for defining the different subtypes of depression and predicting the best drug for treating them. Tricyclic compounds have been indicated by the Food and Drug Administration for major use as antidepressants, and, secondarily, for treating enuresis. Obsessive-compulsive-phobic states, phobias, childhood hyperkinesis, and cataplexy associated with narcolepsy may also respond to treatment with these drugs. Indications for the use of amitriptyline, desipramine, and monoamine oxidase inhibitors are mentioned briefly. 23 references.

001690 Itil, Turan M.; Herrmann, Werner M.; Blasucci, Daniel; Freedman, Alfred. 150 White Plains Road, Tarrytown, NY 10591 **Male hormones in the treatment of depression: effects of mesterolone.** Progress in Neuro-Psychopharmacology (Oxford). 2(4):457-467, 1978.

The effects of mesterolone, a synthetic male hormone, in the treatment of depression were investigated. Based on the scalp recorded and computer analyzed EEG, in high dosages antidepressant and in low dosages psychostimulant properties of mesterolone were predicted. Open, uncontrolled clinical trials suggest dose related antidepressant properties of mesterolone. The higher the dosage, the more therapeutic effects were established. A double-blind, placebo controlled study suggests that the symptoms of anxiety, lack of desire, lack of drive, and impaired satisfaction may benefit from low dosages of mesterolone. 21 references. (Author abstract modified)

001691 Jacobson, Alan F. Department of Psychiatry, University of Miami School of Medicine, Miami, FL **Doctor-patient concordance in a placebo-controlled trial of Limbitrol versus its components.** Psychopharmacology Bulletin. 14(3):61-63, 1978.

In a summary of a paper delivered at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, December 14-16, 1977, doctor and patient concordance in a trial of Limbitrol versus its two components (amitriptyline and chlordiazepoxide) was discussed. The double blind, placebo controlled study provided an opportunity to determine if the results of a physician rating scale were in agreement with the results from a patient self-rating scale in regard to the clinical efficacy of the four treatment groups (amitriptyline, chlordiazepoxide, Limbitrol, and placebo). Subjects were 56 depressive patients. After 4 weeks, doctor ratings indicated no significnat difference between the treatment groups, while patient recorded profiles of mood statements revealed that amitriptyline was significantly more efficacious than either placebo of Limbitrol. The discordance between doctor and patient ratings regarding relative drug efficacy was discussed with reference to its implications for future research in psychopharmacology. 6 references.

001692 Landowski, Jerzy; Lysiak, Wieslawa; Angielski, Stefan. Klinika Chorob Psychiczynch AM, ul. Debinki 7, 80-211 Gdansk, Poland **/The subgroup of bipolar primary affective illnesses with an increased value of Michaelis constant of blood platelet monoamine oxidase./** Podgrupa dwubiegunowej pierwotnej choroby afektywnej o podwyzszonej wartosci stalej Michaelisa

monoaminooksydazy plytek krwi. Psychiatria Polska (Gdansk). 12(4):449-456, 1978.

Kinetic parameters of blood platelet monoamine oxidase (MAO) were determined in 22 subjects with bipolar primary affective illness, using benzylamine as substrate for the enzyme. The prophylactic effectiveness of lithium and the course of the illness were also assessed. The results show that bipolar primary affective illness includes a uniform subgroup with characteristic features. For patients with bipolar primary affective illness, there was diminished affinity of blood platelet MAO to the substrate to about half that in patients with the unipolar form of primary affective illness or in normal Ss, and there was an increased value of the Michaelis constant. Bipolar patients also demonstrated a specific comportment of the maximum reaction rate of the enzyme in various stages of the illness: its decrease in the depressive phase, increase in the manic phase, and correct values during remission. Other characteristic features of bipolar patients were responsiveness to the prophylactic action on lithium carbonate and a course of the illness, including full remissions and isolated depressive and manic episodes preceded by periods of remission. It is suggested that this subgroup is likely to be an individual nosologic unit. 17 references. (Journal abstract modified)

001693 Lieb, Julian; Collins, Clare. Dana Psychiatric Clinic, Yale-New Haven Hospital, 789 Howard Avenue, New Haven, CT 06504 **Treatment of delusional depression with tranylcypromine.** Journal of Nervous and Mental Disease. 166(11):805-808, 1978.

Four cases of delusional depression successfully treated with tranylcypromine are reported. Three patients had previously been treated unsuccessfully with adequate trials of tricyclic antidepressants and one had been treated with a tricyclic-phenothiazine combination with a poor response. These four patients experienced a dramatic reduction in depression and delusional thinking when treated with tranylcypromine. On the basis of these cases, tranylcypromine appears to be an effective treatment for some patients with delusional depressions. 6 references. (Author abstract modified)

001694 Lipman, Ronald S.; Covi, Lino. Psychopharmacology Research Branch, NIMH, Rockville, MD 20857 **A comparison of physician and patient self-ratings of mood in an outpatient pharmacotherapy trial.** Psychopharmacology Bulletin. 14(3):65-67, 1978.

In a summary of a paper delivered at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, December 14-16, 1977, a comparison of physician and patient self-ratings in the evaluation of mood were studied with reference to an outpatient pharmacotherapy trial of imipramine, diazepam, placebo, and psychotherapy. Patients and physicians completed an adaptation of the Profile of Mood States (POMS) and a global improvement rating. Fifty depressed patients completed 16 weeks of medication with adherence to protocol. Patient POMS were more highly significant than comparable doctor ratings in distinguishing between imipramine and placebo. Global improvement ratings between patients and doctors were about equally sensitive. It was suggested that future pharmacotherapy trials use both types of ratings. 9 references.

001695 Maletzky, Barry M.; Shore, James H. Shore: Department of Psychiatry, University of Oregon Health Sciences Center, Portland, OR 97201 **Lithium treatment for psychiatric disorders.** Western Journal of Medicine. 128(6):488-498, 1978.

The use of lithium in psychiatry is traced by describing the development of lithium as a drug and explaining its clinical employment and associated toxicity. The theories of lithium's mode of action and outstanding research questions concerning lithium are highlighted. The main indication for lithium's use is in those illnesses characterized by cycles of mood, both high and low. Before initiating treatment with lithium, physicians must be familiar with the diagnostic scheme of the major affective disorders, the indications and contraindications to lithium's use, and its principles of treatment, including evaluation before lithium therapy, criteria for monitoring blood levels and signs of impending toxicity. It is concluded that lithium is a safe drug and it has revolutionized the treatment of the major affective disorders. It is asserted that lithium has opened up new and broad avenues of research into the regulation of man's emotions. 125 references.

001696 Mendlewicz, J.; Verbanck, P. New York State Psychiatric Institute, Columbia University, New York, NY **A pharmacogenetic approach to study lithium treatment in manic-depressive illness.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 817-823).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, a pharmacogenetic study of lithium treatment in manic-depressive illness was described. Lithium prophylaxis was examined in 34 pairs of monozygotic twins of which at least one twin had been diagnosed as manic-depressive. Lithium prophylaxis was superior in concordant twins (both diagnosed as manic-depressive) than in discordant twins. Lithium distribution was assessed in nine pairs of discordant twins and nine pairs of concordant twins by estimating lithium red blood cell (RBC)/plasma ratios. The lithium intrapair differences were minimal in both groups of twins, suggesting that genetic factors play a role in lithium ion distribution. The mean lithium RBC/plasma ratios were significantly greater in concordant twins than in discordant twins. 28 references. (Author abstract modified)

001697 Montgomery, S. A.; McAuley, R.; Rani, S. J.; Montgomery, D. B.; Braithwaite, R.; Dawling, S. Psychiatric Research Unit, Preston Hall Hospital, Maidstone, Kent, England **Amitriptyline plasma concentration and clinical response.** British Medical Journal (London). No. 6158:230-231, 1979.

The relationship between amitriptyline plasma concentration and clinical response was investigated. A sample of 65 patients suffering from primary affective disorder with endogenous depression were treated with amitriptyline for 6 weeks. There was a highly significant negative correlation between therapeutic response and plasma concentration of nortriptyline but no such correlation for amitriptyline alone. Patients with high concentrations were not clinically identifiable. The results suggest that high plasma concentrations of nortriptyline and amitriptyline impose a significant clinical disadvantage and may inhibit spontaneous remission. 5 references.

001698 Murphy, D. L.; Slater, S.; de la Vega, C. E.; Lipper, S. Clinical Neuropharmacology Branch, NIMH, Bethesda, MD 20014 **The serotonergic neurotransmitter system in the affective disorders. A preliminary evaluation of the antidepressant and antimanic effects of fenfluramine.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 675-682).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum held in Quebec, July 1976, a preliminary evaluation of the antidepressant and antimanic effects on fenfluramine, a serotonergic agonist, was presented. After 24 days of treatment with fenfluramine (mediam dose 120mg/day), reductions in depression ratings were seen in five of seven patients with bipolar affective disorders and in one of six patients

with unipolar disease. Posttreatment elevations in depression ratings were seen in most of the responding patients. Small but statistically significant reductions in blood pressure and pulse were also observed; weight reductions were slight and not significant. An acute, single dose (60mg) study of the subjective effects of fenfluramine, d-amphetamine, and placebo in 16 hospitalized depressed paiteints revealed no immediate differences between fenfluramine and placebo, while d-amphetamine produced characteristic activating effects. A delayed activating effect of fenfluramine was observed 6 to 8 hours after drug administration. 23 references. (Author abstract modified)

001699 Nakajima, Teruo; Kudo, Yoshio; Kaneko, Ziro. Dept. of Neurology, Institute of Higher Nervous Activity, Osaka University Medical School, Osaka, Japan **Clinical evaluation of 5-hydroxy-L-tryptophan as an antidepressant drug.** Folia Psychiatrica et Neurologica Japonica (Tokyo). 32(2):223-230, 1978.

The Rating Scale for Depression, a Japanese scale, was administered to 59 patients with depressive symptoms as a preparatory step in a double-blind clinical study of the effectiveness of 5-hydroxy-L-tryptophan (L-5-HTP) as an antidepressant drug. A daily dose of 150mg to 300mg of L-5-HTP was administered for 3 weeks. Favorable responses were observed in 40 patients, of whom 13 patients were markedly improved. These effects were noticed in 32 patients (80% of the improved patients) within a week. Analysis of the General Improvement Rating in the various subtypes of depressive symptoms indicates that endogenous depression and involutional or senile depression are the preferable indication of L-5-HTP loading. The main side-effects of L-5-HTP were gastrointestinal disturbances which can be minimized by the simultaneous administration of metoclopromide or trihexyphenidyl. 32 references. (Author abstract)

001700 Nelson, J. Craig; Bowers, Malcolm B., Jr. Department of Psychiatry, Yale University School of Medicine, 333 Cedar St, New Haven, CT 06510 **Delusional unipolar depression: description and drug response.** Archives of General Psychiatry. 35(11):1321-1328, 1978.

The response of 13 delusional unipolar depressives to combination antipsychotic tricyclic antidepressant drug therapy is described in a retrospective study. The research diagnostic criteria were used by two independent raters to verify the presence of a delusional, primary, unipolar or major depressive disorder. Thirteen patients met the criteria and received combined antipsychotic antidepressant pharmacotherapy. Twelve of the 13 responded. This contrasts sharply with the low response rate described for delusional depressives when treated with tricyclic antidepressants alone. Descriptive characteristics of the delusional depressives are compared with those of a group of nondelusional unipolar depressives. Delusional depressives had histories of a greater number of prior depressive episodes and more of the delusional depressives demonstrated a psychomotor disturbance. 37 references. (Author abstract modified)

001701 Paykel, E. S.; Parker, R. R.; Penrose, R. J.; Rassaby, E. Department of Psychiatry, St. George's Hospital Medical School, London S.W.17, England **Prediction of phenelzine outcome in depressives.** Neuropharmacology (Oxford). 17(12):1053-1056, 1978.

In a paper presented at the meeting of the British Association for Psychopharmacology held at the University of Wales Institute of Science and Technology in Cardiff, July 1978, a predictive study of phenelzine outcome in depressives is described. Sixty four patients with depression or mixed anxiety/depression were treated for 4 weeks with phenelzine (30mg/day in the first week, 45mg/day in the second week, and 60mg/day in the third and fourth weeks). A diverse group of predictors was used, comprising most of the classifications of depression that have been related to outcome in the literature, but only four predictor classifications gave significant prediction. Patients characterized as atypical, anxious, neurotic, and less severe were more likely to show improvement on phenelzine treatment; severe, typical, retarded inpatient depressives responded poorly to treatment. 8 references.

001702 Potter, William Z.; Zavadil, Anthony P.; Goodwin, Frederick K. Clinical Psychobiology Branch, National Institute of Mental Health, Bethesda, MD 20014 **Prediction of steady state plasma concentration of imipramine.** Psychopharmacology Bulletin. 14(3):29-33, 1978.

In a summary of a paper delivered at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, December 14-16, 1977, the prediction of the steady state plasma concentration of imipramine by measuring concentrations after a single dose was described. Studies designed to answer whether or not determination of unbound tricyclic antidepressants are pharmacologically meaningful were reviewed. The relative potency of some hydroxylated metabolites of tricyclic antidepressants in the uptake of serotonin or norepinephrine into rat brain synaptosomes were also studied. Observed findings were presented. 15 references.

001703 Potter, William Z.; Goodwin, Frederick K. Clinical Psychobiology Branch, NIMH, 9000 Rockville Pike, Bethesda, MD 20014 **Antidepressant drug levels and clinical response.** Lancet (London). 1(8072):1049-1050, 1978.

In a letter to the editor exception is taken to the assertion of Coppen et al. (1978) that measurements of plasma amitriptyline concentration are not useful in the clinical management of depressed patients. Methodological factors which may have contributed to the lack of correlation between clinical response and plasma levels even in amitriptyline responders are outlined, and previous studies indicating correlations between recovery rates and plasma drug concentrations over 75 ng/ml are summarized. It is suggested that the patient population in the Coppen study may have been atypical. National Institute of Mental Health (NIMH) findings taken with those of previous studies suggest that measurement of antidepressant concentrations can be a useful tool in the clinical management of suitable identified depressed patients. A response by Coppen and his coworkers is appended reiterating that routine monitoring of plasma levels appears to provide little beyond evidence of patient compliance. 9 references.

001704 Preskorn, Sheldon H.; Abernethy, Darrell R.; McKnelly, William V., Jr. Department of Psychiatry, University of Kansas Medical Center, 39th and Rainbow Blvds., Kansas City, KS 66103 **Use of saliva lithium determinations for monitoring lithium therapy.** Journal of Clinical Psychiatry. 39(10):756-758, 1978.

During acute and chronic administrations of lithium, 25 patients were studied to determine the effect of other psychotropic drugs on the plasma saliva lithium correlations. Changes, even discontinuation, in either tricyclic antidepressants or neuroleptics did not affect the plasma saliva ratio which had an overall correlation coefficient of $r=.79$. The relationship using linear regression analysis was described by the equation: $y=2.27x-.45$. Individual plasma salivary relations were described by this equation in 87% of the cases. The study extends the usefulness of these determinations to include patients on lithium and neuroleptics or tricyclic antidepressants. 13 references. (Author abstract)

001705 Rapp, W. Department 2, Umedalen Hospital, S-900 10 Umea 10, Sweden **Comparative trial of amitriptyline-N-oxide and amitriptyline in the treatment of out-patients with depressive syndromes.** Acta Psychiatrica Scandinavica (Kobenhavn). 58(3):245-255, 1978.

Amitriptyline-N-oxide and amitriptyline were compared in a double-blind test on outpatients with depressive symptoms, 21 and 22 patients, respectively. The globally rated effect and effects upon various depressive symptoms of the two drugs were equal. It was found that with amitriptyline-N-oxide, definite reversal of depression occurred somewhat earlier, and there was less tendency to side-effects such as those of an anticholinergic or a sedative nature or effects upon blood status or liver function. 12 references. (Author abstract modified)

001706 Risch, Samuel C.; Huey, Leighton Y.; Janowsky, David S. Department of Psychiatry, San Diego VA Hospital, 3350 La Jolla Village Drive, La Jolla, CA 92161 **Plasma levels of tricyclic antidepressants and clinical efficacy: review of the literature -- Part I.** Journal of Clinical Psychiatry. 40(1):4-16, 1979.

The literature of the last 10 years concerning the relationship between plasma levels of the tricyclic antidepressants and clinical efficacy is presented. For all the agents reviewed, there is marked variation in steady state plasma levels among individuals on a given dosage regimen. It is suggested that for some of the tricyclic antidepressants, there may be critical ranges of steady state plasma levels that must be achieved for maximal therapeutic efficacy below or above which there may be a suboptimal therapeutic response. For other tricyclic antidepressants, the relationship between plasma levels and clinical efficay is not yet clear. 75 references. (Author abstract modified)

001707 Sands, Dorothy. St. Bernard's Hospital, Sothall, England **Nursing care study: acute psychotic disturbance and regression in an adolescent girl.** Nursing Times (London). 74(50):2055-2057, 1978.

A case history is presented of a 15-year-old girl suffering from acute psychotic disturbance and regression. Despite ECT and medication it has been possible only temporarily to relieve the patient's depressed and psychotic state. Her prognosis is considered to be poor with increasing periods of admission to the hospital. A diagnosis of schizophrenia with a depressive component is recorded.

001708 Schatzberg, Alan F.; Cole, Jonathan O. McLean Hospital, 115 Mill Street, Belmont, MA 02178 **Benzodiazepines in depressive disorders.** Archives of General Psychiatry. 35(11):1359-1365, 1978.

The literature on benzodiazepines in depressive disorders is reviewed. Twenty comparative double-blind studies indicate they are less effective than standard antidepressants in the treatment of several types of depressive illnesses. Although they display definite anxioltic properties and may elevate mood, they exert limited effect on the core symptoms of endogenous depression. Finally, an argument is made that benzodiazepines are primarily aniolytic rather then antidepressant. 48 references. (Author abstract modified)

001709 Strzyzewski, Wlodzimierz; Rajewski, Andrzej; Kapelski, Zdzislaw; Sydor, Leszek. Katedra i Klinika Psychiatryczna Akademii Medycznej w Poznaniu, ul. Szpitalna 27/33, Poland **/Studies of psychomotor activity as a clinical depression index in the course of imipramine treatment./** Badania aktywnosci psychoruchowej jako klinicznego wykladnika depresji w trakcie leczenia imipramina. Psychiatria Polska (Gdansk). 12(3):403-410, 1978.

Studies were conducted to establish whether and to what extent the parameters of psychomotor activity are representative indices of the therapeutic effects of the thymoleptic, imipramine, in endogenous depressive syndromes, using a sample of 33 patients. Clinical medical scales and self-evaluation scales for depression were used and investigations of psychomotor activity were performed. A close interdependence was detected between the clinical and experimental indices of psychomotor activity and general symptom intensity of the depressive syndrome. It is thought that the described methods are useful in the investigation of indices of psychomotor activity because they are easily applied and give objective findings. 15 references. (Journal abstract modified)

001710 Strzyzewski, Wlodzimierz; Kapelski, Zdzislaw; Rajewski, Andrzej; Sydor, Leszek. Katedra i Klinika Psychiatryczna AM w Poznaniu, ul. Szpitalna 27/33, Poland **/Experimental studies on the effect of imipramine on the reactivity of patients with endogenous depression./** Badania eksperymentalne nad wplywem imipraminy na reaktywnasc u chorych na depresje endogenna. Psychiatria Polska (Gdansk). 12(3):357-364, 1978.

Nervous system reactivity was studied in 33 imipramine treated patients with endogenous depressive syndromes. Measurements performed pretreatment during the depressive phase showed decreased reactivity depending on the severity of psychomotor disorders. The reactivity parameters were more rapidly normalized during imipramine treatment than were the psychometric indices of disorders of psychomotor activity. Improvement in the area of orthostatic reactivity was found to progress more slowly than did clinical improvement. Results are interpreted in relation to the activation hypothesis concerning the pathomechanism of endogenous depression. 17 references. (Journal abstract)

001711 Sulser, F. no address **Symposium 12: indolamines and precursors in depressive state. Anti-depressive action of L-5-hydroxytryptophan.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 625-682).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, symposium 12 was concerned with the involvement of the serotonergic neurotransmitter system in affective disorders. The successful use of L-5-hydroxytryptophan in the treatment of depression and of intention/action myoclonus was reported. The effects of phenelzine, fluoxetine, probenecid, and fenfluramine on serotonin metabolism and on depression were also discussed.

001712 Taracha, Ewa; Szukalski, Bogdan; Zaluska, Maria. Instytut Psychoneurologiczny, Al. Sobieskiego 1/9, 02-957 Warsaw, Poland **/Cortisol level in the plasma of patients with affective illness: correlations with tryptophan and 5-hydroxyindoleacetic acid levels./** Poziom kortyzolu w osoczu chorych na chorobe afektywna: korelacje z poziomem tryptofanu i kwasu 5-hydroksyindolooctowego. Psychiatria Polska (Gdansk). 12(3):317-323, 1978.

Cortisol concentration was determined in the morning and at night in the blood of 17 patients with simple depression and 18 normal subjects, and its correlation with blood levels of tryptophan and urine levels of 5-hydroxyindoleacetic acid was investigated. Patients were receiving amitryptiline in daily doses of 200 to 300mg. Patients showed no increased cortisol secretion as compared with controls, but those patients who improved under amitryptiline treatment showed decreased cortisol concentration in the morning and at night, and a lower ratio of that concentration. At the same time they showed increased 5-hydroxyindoleacetic acid secretion and an increased proportion of free trypto-

phan as compared with the proportion of plasma protein bound tryptophan. In patients who had not improved under amitryptiline treatment, the biochemical parameters determined were not unambiguously correlated. Findings point to the role of serotonergic mechanisms in the CNS regulation of cortisol secretion. 15 references. (Journal abstract)

001713 Vogel, William; Klaiber, Edward L.; Broverman, Donald M. Worcester State Hospital, Worcester, MA **Roles of the gonadal steroid hormones in psychiatric depression in men and women.** Progress in Neuro-Psychopharmacology (Oxford). 2(4):487-503, 1978.

The roles of the gonadal steroid hormones in psychiatric depression in men and women were investigated. Findings indicate that depressed men and women who failed to respond to conventional antidepressant treatment showed significant alleviation of depressive symptoms when treated with high doses of gonadal steroids (conjugated oral estrogen in women; mesterolone in men). Depression in men is accompanied by a high production of estradiol; and depression in women is accompanied by higher production of testosterone. The relationship between these findings and the therapeutic effects of gonadal hormones on depression are unknown. 27 references. (Author abstract modified)

001714 Ward, Nicholas G.; Bloom, Valerie L.; Friedel, Robert O. Department of Psychiatry and Behavioral Sciences, RP-10, University of Washington, Seattle, WA 98195 **The effectiveness of tricyclic antidepressants in chronic depression.** Journal of Clinical Psychiatry. 40(1):49-52, 1979.

It was hypothesized that chronic depressions with vegetative signs would show response rates to tricyclic antidepressants comparable to those previously reported for acute depressions. Fifteen moderately to severely depressed individuals with several vegetative signs and depressions lasting more than 1 year were treated for 1 week on placebo and then 4 weeks with doxepin. Eighty percent of the patients showed marked to moderate improvement on doxepin and none showed placebo response during week 1. These improvement rates are comparable to rates reported in drug trials with acute patients and support the original hypothesis. 15 references. (Author abstract modified)

001715 Welbel, Leszek; Nurowska, Krystyna. Instytut Psychoneurologiczny, Al. Sobieskiego 1/9, 02-957 Warsaw, Poland **/Prophylactic effects of lithium carbonate in affective disorders./** Zapobiegawcze dzialanie weglanu litu w chorobach afektywnych. Psychiatria Polska (Gdansk). 12(3):385-390, 1978.

Patients (n=25) with endogenous affective disorders were administered lithium carbonate prophylactically in daily doses of 400 to 2400mg over periods of at least 18 months. A blood serum lithium level of 0.5to 1.6mEq/1 was assumed to have therapeutic and prophylactic value. Controls were patients receiving thymoleptics or neuroleptics. Lithium medication prevented aggravation of affective disorders in about 50% of the patients. In the control group, 84% of the patients showed recurrence of affective disorders. The Length of rehospitalization was shorter by 1 month for lithium patients than for controls. Slight or moderate side effects were observed in 64% of the patients receiving lithium carbonate. 12 references. (Journal abstract)

10 DRUG TRIALS IN NEUROSES

001716 Brown, Ben Maurice. Student Health Service, University of Arizona, Tucson, AZ 85724 **Depressed college students and tricyclic antidepressant therapy.** Journal of the American College Health Association. 27(2):79-83, 1978.

The results of a retrospective study of depression diagnosis, treatment, and outcome in a university mental health clinic are reported. Of 267 outpatients seen during 3 consecutive months in 1977, 76 presented with significant depressive signs and symptoms. Charts for depressed patients were further analyzed for distribution by diagnostic category, demographic data, and outcome. The majority of depressed patients were diagnosed as depressive neurosis, with the second most frequent diagnosis being adjustment reaction. Adjustment reaction patients generally lacked vegetative signs, were usually treated with psychotherapy alone, and showed improvement in 50% of cases. Vegetative signs, especially sleep disturbance, were noted in 50% of depressive neurotics. These patients were generally treated with psychotherapy and tricyclics, which resulted in greater improvement than psychotherapy alone. Treatment outcomes were poorest for depressives with concomitant character disorders. 19 references. (Author abstract modified)

001717 da Silva Moutinho, Sergio; Arico, Carlos Roberto. Medico-Assistente da Clinica Psiquiatrica do Hospital do Servidor Publico Municipal, Sao Paulo, SP, Brazil **/Comparative double-blind study of the stimulating activity of caffeine and norcanfan./** Estudo comparativo duplo-cego entre a atividade psicoestimulante da cafeina e do norcanfan. Revista Brasileira de medicina (Rio De Janeiro). 35(5):315-318, 1978.

The psychostimulant activity of caffeine and norcanfan were evaluated in a double-blind group comparative trial. Fifty male and female patients complaining of psychasthenia and mild depression due to variegated etiologies were randomly allocated into two groups with equal number of cases. One group was administered 50mg of caffeine, and the second group was administered 10mg norcanfan, both intravenously (one 10ml ampoule a day containing vitamin C (500mg) and glucose (2.5g) as the vehicle), during 10 consective days. Both treatments were found to be efficacious, but no significant difference was found between the two drugs. There was also only a low incidence of untoward effects, particularly in the norcanfan group. 11 references. (Journal abstract modified)

001718 Doongaji, D. R.; Sheth, Ashit; Apte, J. S.; Lakdawala, P. D.; Khare, C. B.; Thatte, S. S. Department of Psychiatry, Seth G. S. Medical College, Parel, Bombay 400 012, India **Clobazam versus diazepam -- a double-blind study in anxiety neurosis.** Journal of Clinical Pharmacology. 18(7):358-364, 1978.

A double-blind study comparing clobazam and diazepam was conducted using 40 outpatients diagnosed as anxious neurotic. Twenty three patients completed the trial under clobazam conditions while 17 completed it under diazepam conditions. Clobazam was administered in three divided doses of 30 to 40mg/day, while diazepam was administered in three divided doses of 15 to20 mg/day, following a fixed dosage schedule. No significant differences were noted between the two treatment conditions during the drug trial period. The patients on clobazam maintained greater improvement during the placebo trial period for the variables somatic anxiety and nights of sleep disturbance. Simultaneous motor coordination tests showed greater improvement on clobazam. 11 references. (Author abstract modified)

001719 Halmi, Katherine A. Dept. of Psychiatry, University of Iowa, Iowa City, IA 52240 **Biological and behavioral predictors to treatment in anorexia nervosa.** Psychopharmacology Bulletin. 14(4):85-86, 1978.

In a paper presented at the session on biological and behavioral prediction of psychopharmacological treatment response, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, biological and behavioral predictors to treatment in an-

orexia nervosa are described. Various demographic and behavioral characteristics have been shown to predict outcome, and in some cases even treatment response in anorexia nervosa. However, there have been virtually no investigations to determine if various biological characteristics of anorexia nervosa can predict outcome in response to specific treatments. 10 references.

001720 Keller, David; Foa, Edna B. Eromin Center, 1735 Nodain Street, Philadelphia, PA 19145 **Phenothiazines combined with systematic desensitization in a psychotic patient with obsessions about homosexuality.** Journal of Behavior Therapy and Experimental Psychiatry. 9(3):265-268, 1978.

A case study is presented in which obsessions about homosexuality were treated by phenothiazines combined with systematic desensitization The obsessions, as well as the anxiety associated with them, diminished and social relationships improved significantly. Additional support for antipsychotic medication combined with behavioral treatment with a variety of neurotic disorders was obtained. 8 references. (Author abstract modified)

001721 Mendels, J.; Secunda, S.; Schless, A.; Sandler, K.; Singer, J. Veterans Administration Hospital, University and Woodland Avenues, Philadelphia, PA 19104 **A double-blind comparison of clobazam and diazepam in the treatment of anxiety neurosis.** Journal of Clinical Pharmacology. 18(7):353-357, 1978.

A 5 week double-blind comparative evaluation of clobazam and diazepam in anxious patients is presented. A total of 61 patients were randomly assigned to two treatment groups. Changes in ratings on the Hamilton Anxiety Scale, Clinical Global Impression, Anxiety Status Inventory, and Self-Rating Symptom Scale indicate comparable results with the two treatments. It is concluded that 20-80mg clobazam and 10-40mg diazepam daily are effective in the treatment of symptoms of anxiety and tension with similar side-effects. 16 references. (Author abstract modified)

001722 Rickels, K.; Downing, R. W. Psychopharmacology Unit, Department of Psychiatry, University of Pennsylvania, Philadelphia, PA 19104 **The anxiolytic agents and their limitations.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 343-350).

At the Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the use and limitations of antianxiety agents in the treatment of nonpsychotic anxiety was discussed. The anxiolytics, particularly the benzodiazepines, are safe and effective agents for the symptomatic treatment of neurotic anxiety, and their efficacy in alleviating anxiety is firmly supported by controlled studies. However, many anxious patients remain relatively symptomatic following the usual short-term (4-6 weeks) drug treatment period; chronically anxious patients may require more long-term drug treatment. The need for more research to provide reliable information on the benefits and limitations of long-term and maintenance treatment in anxious patients is emphasized, and patient and physician attributes that contribute to the outcome of anxiolytic treatment are discussed. 19 references. (Author abstract modified)

11 DRUG TRIALS IN MISCELLANEOUS DIAGNOSTIC GROUPS

001723 Arnold, L. Eugene; Christopher, James; Huestis, Robert D.; Smeltzer, Donald J. Dept. of Psychiatry, Ohio State University, College of Medicine, 473 W. 12th Ave., Columbus, OH 43210 **Megavitamins for minimal brain dysfunction: a placebo-controlled study.** Journal of the American Medical Association. 240(24):2642-2643, 1978.

A double-blind, placebo controlled study of the effects of megavitamins (Cott's regimen) on minimal brain dysfunction, in which 31 children with minimal brain dysfunction randomly received either placebo or megavitamin combination for 2 weeks, is described. Only two children responded so well that stimulants were not considered necessary; both were in the placebo group. Change scores from pretest to posttest on four blind ratings by teachers and parents did not show a significant difference between the placebo and vitamin groups. 6 references. (Author abstract modified)

001724 Bastani, Jehangir Boman. Psychiatry Service, Veterans Administration Hospital, 600 S. 70th St., Lincoln, NE 68510 **The minimal brain dysfunction alcoholic.** Indian Journal of Psychiatry (Poona). 20(2):174-177, 1978.

The problem of a subgroup of adult alcoholics who have minimal brain dysfunction (MBD) symptoms concealed by a diagnosis of alcoholism, is considered. Literature on the subject is reviewed. Fifteen alcoholic patients who manifested traits of MBD, and with childhood histories suggestive of MBD, were tested physically and psychologically, and were treated with psychostimulants. Eighty seven percent of the patients responded favorably to psychostimulants, with 11 of the 15 sober at the end of the study. It is recommended that this diagnosis and treatment be considered for alcoholics. 11 references.

001725 Bateman, D. N.; Kahn, C.; Legg, N. J.; Reid, J. L. Wolfson Unit of Clinical Pharmacology, The University, Newcastle upon Tyne, NE1 7RU, England **Metoclopramide in Parkinson's disease.** Clinical Phamacology and Therapeutics. 24(4):459-464, 1978.

The effect of metoclopramide (10 or 20mg, three times a day) was compared with that of placebo in a double-blind randomized crossover study in 11 treated parkinsonian patients. Metoclopramide had no significant effect on parkinsonian symptoms and signs, as assessed by a neurologist, but patients' self-scored assessments indicated worsening of tremor at the higher dose. Psychophathologic features and subjective symptoms were not significantly changed by metochlopramide. Despite its dopamine receptor blocking action, metoclopramide appeared to be well tolerated in a dose of 10mg three times a day by parkisonian patients and may be safely used as an antiemetic without deterioration in function. 23 function. 23 refereences. (Author abstract modified)

001726 Bergonzi, Paolo; Bianco, Alessandro; Mazza, Salvatore; Mennuni, Gioacchino. Clinica Neurologica, Universita Cattolica, Largo A. Gemelli, 8, I-00168 Roma, Italy **Night sleep organization in patients with severe hepatic failure: its modifications after L-dopa treatment.** European Neurology (Basel). 17(5):271-275, 1978.

All night polygraphic sleep recordings were obtained for 20 subjects with severe hepatic failure. Baseline recordings showed sleep disruption, with a large degree of wakefulness and severe reductions in sleep stages, particularly rapid eye movement (REM) sleep. Treatment with L-dopa slightly improved the psychological performance of these patients, but exacerbated their sleep disturbances. In contrast, treatment with lactulose improved both neuropsychiatric state and sleep organization; sleep stages tended to return to normal and REM sleep clearly increased. 26 references. (Author abstract modified)

001727 Blau, Stephen. 9 Centre Avenue, Larchmont, NY 10538 **A guide to the use of psychotropic medication in children and adolescents.** Journal of Clinical Psychiatry. 39(10):766-772, 1978.

A guide to the use of psychotropic medications with children and adolescents is presented. There are many physiological dif-

ferences between children and adults. Consequently, caution should be exercised when prescribing medication to children. Nonetheless, there are a number of clinical entities in which medication can be a useful adjunct to the overall therapeutic approach to a child or adolescent. The most common mediations in use are outlined, and some of the most important problems encountered in association with these medications are discussed. Clinical descriptions, indications for medication, dosages, and prognosis are examined. Entities discussed include hyperkinesis, childhood depression, psychotic and borderline disorders, somnabulism, enuresis, Gilles de la Tourette syndrome, and school phobia. 70 references. (Author abstract modified)

001728 Brown, Gerald L.; Ebert, Michael H.; Hunt, Robert D. Biological Psychiatry Branch, National Istitute of Mental Health, Bethesda, MD 20014 **Plasma d-amphetamine absorption and elimination in hyperactive children.** Psychopharmacology Bulletin. 14(3):33-35, 1978.

In a summary of a paper delivered at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, December 14-16, 1977, the absorption and elimination of d-amphetamine in hyperactive children was studied. Subjects were 16 5-to-12-year-old hyperactive boys. Results show an apparent elimination half-life of d-amphetamine of approximately 6.8hours, and indicate that behavioral and motor activity responses relate temporally to the absorption phase, but do not correlate with actual plasma levels of d-amphetamine. 26 references.

001729 Brown, Gerald L.; Ebert, Michael H.; Mikkelsen, Edwin J.; Hunt, Robert D. no address **Plasma levels of d-amphetamine and motor activity in hyperactive children following administration of a sustained release preparation. (Unpublished paper).** Bethesda, MD, NIMH, 1978. 4 p.

A study to assess the pharmacokinetic differences between tablets and sustained release capsules of d-amphetamine in hyperactive children is presented. In addition, the relationship between phamacokinetic differences and differential motor activity response was examined. Seventeen selected hyperactive boys aged 5 to 12 years old were subjects. A controlled diet to stabilize urine pH was administered, plasma levels of d-amphetamine were determined by radioimmunoassay, and blood sampling utilized a heparin lock and armboard to minimize venipuncture. The half-life for sustained release capsules was 8.6plus or minus 1.1hours, while that for tablets was 6.8plus or minus 0.5hours. The mean half-life for both capsules and tablets were identical at 7.5plus or minus 1 hour in 7 children common to both studies. The capsule appearred to be absorbed more slowly at hours 1 and 2 with the same level for capsules and pills reached by hour 3. There were no significant differences in elimination half-life. Significant motor activity response to the drug appears to be related to the absorption phase and possibly to the rate of absorption itself. The prolonged rate of absorption and maintenance of a more stable, plateau like plasma level does not appear to lead to a more significant or prolonged motor activity response. (Author abstract modified)

001730 Bruck, Connie. no address **Menopause.** Human Behavior. 8(4):38-46, 1979.

Following an historical review of medical/psychological opinion on the menopause, the menopause syndrome is examined in light of current cross-cultural research. The menopause syndrome, as an endocrine deficiency disease treatable with hormone therapy, became much publicized during the 1960's. Symptoms attributed to this syndrome included depression, anxiety, loss of memory, vasomotor symptoms, and a number of other psychosomatic complaints. Since then, research has discredited the idea of such a syndrome: menopausal symptoms have been found to vary with culture, socioeconomic status, personality factors, and family and medical history. In fact, one study indicated that postmenopausal women had fewer psychological/psychosomatic complaints than other age groups, and that the majority did not experience menopause as stressful. The pros and cons of hormone therapy in menopausal women are examined. Finally, the negative effects of the medicalization of menopause are discussed, especially the fostering of a disease attitude toward a normal physiological process.

001731 Burner, Marcel; Tahrat, A. Centre Psycho-Social, Saint-Pierre 1-1003, Lausanne, Switzerland **/Double-blind experiment with Atrium 300 in the treatment of sexual disorders./** Experimentation en double-aveugle de l'Atrium 300 dans le traitement des troubles sexuels. Psychologie Medicale (Paris). 10(6):1165-1171, 1978.

The pharmaceutic activity of Atrium-300 in the treatment of sexual problems was studied using the double-blind method. Sixty subjects were divided into two groups; 30 subjects received 900mg of Atrium per day and 30 subjects received a placebo. The results obtained with Atrium and with the placebo were statistically examined with the Student-Fisher method. Partial and secondary impotence (premature ejaculation, secondary frigidity and orgasmic malfunctioning) responded significantly to Atrium-300. Libido was favorably modified in both sexes, especially so in those who received the actual medication. If the placebo effect from the doctor-patient relationship comes into play in the treatment of sexual troubles, Atrium-300, whose effectiveness was superior to that of the placebo in treating the major symptoms, has systematically shown a specific action which surpasses that by the placebo. It is concluded that Atrium-300 can be recommended for the treatment of sexual problems. 5 references. (Author abstract modified)

001732 Capote, B.; Parikh, N. 308 Northwest Second St., Grand Prairie, TX 75050 **Cyclandelate in the treatment of senility: a controlled study.** Journal of the American Geriatrics Society. 26(8):360-365, 1978.

Cyclandelate, a drug often prescribed for those symptoms described as senility or senile dementia (depression, memory loss, irritability, hostility), was assessed under double-blind conditions. Fifty eight elderly patients were randomly assigned to two groups and administered either 1600mg of cyclandelate daily or identical appearing placebo capsules. Initially, and every four weeks thereafter, the patients were examined for changes in vital signs and for adverse reactions. The Sandoz Clinical Assessment Geriatric Scale and the Nurses Observation Scale Inpatient Evaluation were completed. At the final evaluation, a global rating was obtained. The data suggest that cyclandelate is a safe and moderately effective treatment for certain symptoms of senescence in carefully selected patients. 10 references. (Author abstract modified)

001733 Chandra, Benjamin. Department of Neurology, University of Airlangga, School of Medicine, Surabaya, Indonesia **Treatment of disturbances of consciousness caused by measles encephalitis with levodopa.** European Neurology (Basel). 17(5):265-270, 1978.

The effect of L-dopa on the state of consciousness in patients with measles encephalitis was investigated in a double blind trial with 39 children (aged 2 to 12 years old). L-dopa improved the state of awareness and the diffuse disturbances in the EEG in these patients. The death rate was significantly lower and there were fewer mental sequelae in the L-dopa treated patients than in the placebo group. The use of L-dopa in patients with mea-

sles encephalitis is recommended. 12 references. (Author abstract modified)

001734 Ciraulo, Dominic; Lind, Leonard; Salzman, Carl; Pilon, Robert; Elkins, Robert. Somatic Therapies Unit, Massachusetts Mental Health Center, 74 Fenwood Rd., Boston, MA 02115 **Sodium nitroprusside treatment of ECT-induced blood pressure elevations.** American Journal of Psychiatry. 135(9):1105-1106, 1978.

A case study of electroconvulsive therapy (ECT) induced hypertension control is presented. An already hypertensive 70-year-old man was treated with sodium nitroprusside during ECT in order to prevent dangerous blood pressure elevations which had occurred previously during ECT. The only adverse effect observed was temporary hypotension which was controlled by discontinuation of the sodium nitroprusside. Sodium nitroprusside is described as a vasodilator which acts rapidly when used as an intravenous infusion. 10 references.

001735 Cochran, John W.; Fox, Jacob H.; Kelly, Mark P. Dept. of Neurology, Rush-Presbyterian-St. Luke's Medical Center, 1753 West Congress Parkway, Chicago, IL 60612 **Reversible mental symptoms in temporal arteritis.** Journal of Nervous and Mental Disease. 166(6):446-447, 1978.

A case history in which a deficit in nonverbal memory documented with psychological testing was resolved after a course of steroids is described. A 77-year-old male was admitted with a 4 day history of headache. Testing indicated there was a mild disruption of attention and marked difficulty with visual nonverbal memory, occurring in the context of otherwise good cognitive function. The patient's problem with nonverbal memory resolved after a course of prednisone. It is suggested that the patient's memory was impaired on the basis of temporal arteritis. It is further suggested that some patients presenting with dementia as well as focal mental signs may have temporal arteritis. The diagnosis can easily be made by performing an erythrocyte sedimentation rate and temporal artery biopsy. 4 references. (Author abstract modified)

001736 Cohen, Ira L.; Anderson, Lowell T.; Campbell, Magda. Dept. of Psychiatry, New York University Medical Center, New York, NY **Measurement of drug effects in autistic children.** Psychopharmacology Bulletin. 14(4):68-70, 1978.

In a paper presented at the session on new approaches in childhood psychopharmacology, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, measurement of drug effects in the treatment of autistic children is reviewed. Noting that evaluation of drug effects with autistic children has been very poor, two scales for evaluating drug effects with children are described. The Children's Psychiatric Rating Scale is described as having two major flaws; both the symptom descriptions and the numbers indicative of their magnitude are ill defined. Objective rating scales using relatively well defined criteria for behavioral evaluation developed by Cohen, Anderson, and Campbell are described. 12 references.

001737 Dotti, Andrea; Bersani, Giuseppe. Universita degli Studi di Roma, Rome, Italy **/Effects of the suspension of antiparkinsonian drugs in a group of patients given depot neuroleptics for maintenance therapy./** Effetti della sospensione degli antiparkinson in un gruppo di pazienti trattati ambulatorialmente con neurolettici depot. Revista di Psichiatria (Roma). 13(1):23-30, 1978.

A study of the interruption of antiparkinsonian drugs in a group of subacute schizophrenics, treated in maintenance therapy with both decanoate of fluphenazine and flupentixene depot is reported. The interruption did not cause the reappearance of extrapyrimidal symptoms in 78.3% of the patients. On the contrary, five of them showed a relapse. Two of the five had been treated with decanoate of fluphenazine. On the basis of the results, it is concluded that after a period of 3 months, from the association of neuroleptics and antiparkinson therapy, when it seems necessary, it is possible to interrupt the antiparkinson treatment in a high percentage of cases without any consequence of a neurological type. 18 references. (Journal abstract modified)

001738 Fahrmeier, Edward D. University of Maryland Baltimore County, Baltimore, MD 21228 **Stimulant drug therapy in control of on-task behavior: a case study.** Psychological Reports. 42(3):1285-1286, 1978.

Issues in the prescription of stimulant drugs for the control of hyperactive behavior in the classroom are discussed, and a procedure by which school personnel can measure objectively the drug effects is presented. The procedure is illustrated via a case report of a hyperactive 8-year-old boy in the school environment. Although there were no significant differences between drug (Ritalin) and placebo conditions for either lesson or activity, the behavioral observation procedure is characterized as one means for investigating the complex issues involved. Rearrangement of some of the classroom activities for the hyperactive child is discussed as an alternative to stimulant drug therapy. 2 references.

001739 Finzi, B.; Peruzza, M.; Conciato, M. Giorgi. Ente Osp. Reg. Giustinian, Venezia, 2-a Div. Med., Venice, Italy **/Long-term drug therapy in ulcerative colitis./** Farmacoterapia a lungo termine nella colite ulcerosa. Medicina Psicosomatica (Roma). 23(1):65-70, 1978.

A study was conducted on 30 patients with ulcerative colitis who were administered a gefarnate diazepam preparation for 1 to 7 years at regular intervals. The clinical, endoscopic, and laboratory findings, effected before, during, and after the observation period, demonstrate the effectiveness and tolerance of the drug. The aim of the study, its experimental setting, method of research, the cases observed, treatment, results, and conclusions are described. 14 references. (Journal abstract modified)

001740 Haefely, W. E. no address **Symposium 16: new trends in the mechanisms of action of minor tranquilizers.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 889-932).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, symposium 16 considered new trends in the mechanisms of action of minor tranquilizers. Pharmacological and behavioral approaches to the characterization of anxiolytics (minor tranquilizers) were discussed. The interaction of minor tranquilizers with synaptic processes mediated by gamma-aminobutyric acid was described, and the modification of excitatory and inhibitory synaptic mechanisms by minor tranquilizers was reviewed. The action of diazepam, haloperidol, morphine, and muscimol on the cyclic guanosine monophosphate content of the cerebellum was reported.

001741 Harrower, A. D. B. Monklands District General Hospital, Airdrie, Scotland **Bromocriptine in anorexia nervosa.** British Journal of Hospital Medicine (London). 20(6):672, 674-675, 1978.

The use of bromocriptine to influence mood changes and to modify hypothalamic control of prolactin secretion in the treatment of patients suffering from anorexia nervosa is discussed. In one experiment, bromocriptine produced a drop in the abnormal

plasma growth hormone levels but did not correct the abnormal pattern of response. These results imply that bromocriptine may be acting at a pituitary level, suppressing growth hormone release without modifying any abnormal hypothalamic stimuli. Some clinical trials are discussed. It is concluded that there are reasonable theoretical grounds for treating anorexia nervosa with bromocriptine, at least as an adjunct to other measures. 30 references.

001742 Janowsky, David S.; Davis, John M.; Huey, Leighton; Judd, Lewis L. Department of Psychiatry, University of California at San Diego, La Jolla, CA 92093 **Adrenergic and cholinergic drugs as episode and vulnerability markers of affective disorders and schizophrenia.** Psychopharmacology Bulletin. 15(1):33-34, 1979.

In a summary of a paper presented at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan in December, 1977, the use of centrally acting adrenergic and cholinergic drugs as tools to behaviorally mark the beginning and end of psychotic episodes and to define vulnerability in affective disorders is discussed. Intravenous injection of methylphenidate can rapidly and temporarily intensify preexisting psychotic symptoms in hallucinating, catatonic, or delusional schizophrenics. Methylphenidate and L-DOPA have both produced transient manic episodes in patients with affective disorders. Physostigmine, a cholinesterase inhibitor that raises central acetylcholine levels, has intensified preexisting depressive symptomatology in manic, depressive, and schizoaffective patients. The clinical use of these drugs as markers of residual effects of affective episodes and as vulnerability or trait markers is discussed. 7 references. (Author abstract modified)

001743 Kaiser, E.; Kies, N.; Maass, G.; Schmidt, H.; Beach, R. C.; Bormacher, K.; Herrmann, W. M.; Richter, E. Deutsche Klinik fur Diagnostik, Aukammallee 33, D-6200 Wiesbaden, Germany **The measurement of the psychotropic effects of an androgen in aging males with psychovegetative symptomatology: a controlled double blind study, mesterolone versus placebo.** Progress in Neuro-Psychopharmacology (Oxford). 2(4):505-515, 1978.

A controlled double-blind study of the effects of mesterolone, a synthetic androgen, on the psychovegetative symptomatology of aging males is described. A battery of psychometric tests was administered to 66 males between 45 and 60 years both before and after daily mesterolone treatment for 5 weeks. Mesterolone effects included the following: decreased neuroticism, increased extraversion and masculine self-image, clear tendencies of improved activity and performance, and a slight tendency of reduced psychovegetative complaints. 26 references. (Author abstract modified)

001744 Kolata, Gina Bari. no address **Mental disorders: a new approach to treatment?** Science. 203(4375):36-38, 1979.

The effects of choline, a precursor of acetylcholine, on patients whose neurological disorders may arise from a lack of brain acetylcholine were examined. Research on the use of choline on patients with tardive dyskinesia, mania, and senile dementia (Alzheimer's disease) is discussed. An unpleasant side-effect of choline, a strong, fishy odor caused by the breakdown of choline to trimethylamine, can be avoided by the use of lecithin, the dietary source of choline. It is concluded that choline is not expected to be a panacea for all disorders characterized by a lack of brain acetylcholine, but it may herald a new era in the treatment of neurological disorders.

001745 Lehmann, H. E. no address **Symposium 1: geriatric neuro-psychopharmacology.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 17-81).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the first symposium addressed the topic of geriatric neuropsychopharmacology. Current theories of the aging brain and methods of assessing the cognitive function and clinical status of geriatric patients were discussed. The use of anxiolytics, neuroleptics, antidepressants, and cerebral protectors in psychogeriatrics is reviewed. Particular attention is given to the pharmacology of nootropic drugs, such as piracetam. As a class, the nootropic drugs enhance learning acquisition and resist impairing agents, facilitate interhemispheric transfer of information, enhance resistance to brain aggression, increase tonic cortico/subcortical control, and do not cause behavioral side-effects such as sedation, stimulation, or other interference with arousal.

001746 Lieb, Julian; Zeff, Arnold. Yale University School of Medicine, New Haven, CT 06510 **Lithium treatment of chronic cluster headaches.** British Journal of Psychiatry (London). 133(December):556-558, 1978.

Two case histories are reported of patients whose cluster headaches had brought them to the point of contemplating suicide. Both patients responded quite dramatically to treatment with lithium carbonate. Case 1 had been virtually free of headaches for over 2 years and case 2 had been in remission for over 12 months. Possible physiological mechanisms of relief which this treatment affords are discussed. 14 references. (Author abstract modified)

001747 Lindeboom, S. F.; Lakke, J. P. W. F. Dept. of Neurology, University Hospital, Groningen, The Netherlands **Deanol and physostigmine in the treatment of L-dopa-induced dyskinesias.** Acta Neurologica Scandinavica (Kobenhavn). 58(2):134-138, 1978.

Deanol and placebo were administered to 10 parkinsonian patients with levodopa induced dyskinesias in a double-blind crossover fashion. Deanol and placebo did not differ significantly in their effects on dyskinesias. The reported properties of deanol seem to be attributable to a placebo effect. There was no correlation with the results of the physostigmine test. Despite these disappointing results deanol remains intriguing, because in individual cases remarkable improvements on dyskinesias are reported. 9 references. (Author abstract)

001748 Lipman, Ronald S. Psychopharmacology Research Branch, NIMH, Rockville, MD **Stimulant medication and growth in hyperkinetic children.** Psychopharmacology Bulletin. 14(4):61-62, 1978.

In a paper presented at the session on new approaches in childhood psychopharmacology, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the report of the Pediatric Advisory Panel of the FDA concerning stimulant medication and growth in hyperkinetic children is described. following a review of over 30 studies which investigated the possible growth retardation effects of stimulant medicines prescribed for hyperkinetic children, the panel's recommendations for future therapy and research are presented. It is concluded that evidence suggests only a temporary retardation in the rate of growth in weight with little or no slowing in stature and no effect on adult stature or weight. 11 references.

001749 Lipton, Morris A. Department of Psychiatry, University of North Carolina School of Medicine, Chapel Hill, NC 27514 **Lithium: developments in basic and clinical research.** American Journal of Psychiatry. 135(9):1059-1061, 1978.

Current developments in lithium research are discussed. Findings involving lithium's efficacy and mechanisms of action are

outlined. Three investigations of lithium concentration measurement and mechanism of action are described. The studies considered ratios of lithium erythrocyte concentration to that of plasma as a measurement of cellular concentration, mechanisms by which equilibrium is established between intracellular and extracellular lithium, and intersubject variance in cellular efflux and beneficial effects of lithium.

001750 Ludin, H. P.; Ringwald, E.; Lorincz, P. Neurologische Universitatsklinik, CH-3010, Berne, Switzerland **Bromocriptine in Parkinson's disease.** Lancet (London). No. 8089:578-579, 1978.

In a letter to the editor, the investigation of the effect of bromocriptine in Parkinson's disease is discussed. Clinical trials were begun in 1974. Results are reported on 36 patients who were treated for 18 to 38 months with this compound. By using bromocriptine in combination, doses of levodopa and anticholinergic can be kept low and side-effects reduced. With bromocriptine therapy, daily doses have remained unchanged for 24 to 30 months; with other antiparkinsonian agents, doses often have to be increased to maintain therapeutic efficacy. It is concluded that with 22 patients who received long-term therapy, no drug related side-effects have been found. 6 references.

001751 Moroni, M.; Cavalli, G.; Lodola, E. Clinica Medica IV dell'Universita, Milan, Italy **Viminol analgesic activity in elderly patients with chronic pain: a controlled evaluation, using self-rating questionnaires.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 16(11):513-515, 1978.

The analgesic effects of viminol (70mg), chlordiazepoxide (10mg), and a combination of the two drugs were examined in 41 elderly outpatients with chronic pain, primarily due to neoplasma. Alone or combined with chlordiazepoxide, viminol was significantly more effective than chlordiazepoxide alone. No difference in analgesic effect was observed between viminol combined with chlordiazepoxide and viminol alone. 18 references. (Author abstract modified)

001752 no author. no address **Vasopressin to boost memory? Clinical trials will tell.** Medical World News. 19(18):81, 1978.

Recent observations by European clinicians that the antidiuretic hormone vasopressin may restore memory function are to be evaluated at Columbia University's Institute of Neurology and at the psychobiology branch of NIMH. The Columbia study will recruit 40 healthy outpatients between 40 and 70 years of age whose complaints of memory loss are diagnosed as presenile or senile dementia. Nonpsychiatric controls will be included. The NIMH research involves a double-blind design using an anologue of vasopressin, 1-desamino-D-arginine, which lacks adverse side-effects of the natural hormone.

001753 Pappalardo, Maria. Ospedale Psichiatrico Provinciale I, Santa Maria della Pieta, Rome, Italy **/The pharmacotherapeutic problem of insomnia in the aged and the demented./** Il problema farmacoterapico dell'insonnia nel vecchio e nel demente. Lavoro Neuropsichiatrico (Roma). 62(1/2):281-287, 1978.

Hypnotic and sleep inducing drugs used for insomnia among the aged and the demented are discussed. The medicosocial importance which surrounds the resolution of the problem of insomnia in the elderly and the mentally ill is noted. EEG characteristics of specific hypnotic and sleep inducing drugs are ineffective among the elderly and demented patients, and they are counterproductive because of their general toxicity. The mechanism of action of two drugs, nicergoline and cinnarizine, are examined. They are demonstrated to be particularly effective for insomnia among the aged and demented, and their appropriate dosages for these populations are indicated. 20 references. (Journal abstract modified)

001754 Petrie, William M.; Ban, Thomas A. Dept. of Psychiatry, Vanderbilt Medical Center, Tennessee Neuropsychiatric Institute, Nashville, TN **Drugs in geropsychiatry.** Psychopharmacology Bulletin. 14(4):7-19, 1978.

Drug use in geropsychiatry, including antipsychotics, lithium, antidepressants, anxiolytics, hypnotics, and miscellaneous drug groups, is reviewed. It is suggested that drug treatment of psychiatric disorders in the elderly (including organic brain syndrome) will be an area of increasing medical priority in the next 20 years. The standard psychotropic drugs are by far the most widely used drugs in geropsychiatric practice. Neuroleptics are effective for many syndromes in the elderly but have hazardous side-effects. The choise of neuroleptics in the elderly depends greatly on the adverse reactions to be expected. Antidepressants are the second most frequently used drugs in geropsychiatry. Of the agents used specifically for organic brain syndrome, only the vasodilators have been extensively administered clinically. 143 references.

001755 Prien, Robert F.; Cole, Jonathan O. Johns Hopkins University School of Medicine, Baltimore, MD **The use of psychopharmacological drugs in the aged.** In: Clark, W., Principles of psychopharmacology. 2nd ed. New York, Academic Press, 1978. 976 p. (p. 593-605).

Drug therapy for geriatric mental disorder is examined. Topics discussed are: organic brain syndrome; functional mental disorders; general treatment considerations; psychotropic drugs; drugs influencing cerebral circulation; central nervous system stimulants; and other treatments such as dihydroergotoxine, gerovital, and oxygen therapy. Special problems in elderly patients are identified. It is felt that the major challenge in geropsychiatry is the development of agents capable of reversing or halting intellectual deterioration in chronic organic brain syndrome. 19 reference.

001756 Rapoport, Judith L.; Mikkelsen, Edwin J.; Zavadil, Anthony P. Biological Psychiatry Branch, NIMH, Bethesda, MD 20014 **Plasma imipramine and desmethylimipramine concentration and clinical response in childhood enuresis.** Psychopharmacology Bulletin. 14(4):60-61, 1978.

In a paper presented at the session on new approaches in childhood psychopharmacology, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the relationship between plasma imipramine (IMI), desmethylimipramine (DMI) concentration and clinical response in childhood enuresis is reviewed. Results of a study of 13 6 to 12-year-old enuretic boys indicate that IMI clearly reduced enuretic frequency. Clinical response correlate significantly with plasma DMI. It seems likely that both adrenergic and cholinergic mechanisms are involved in the therapeutic action of tricyclic drugs in enuresis but the adrenergic mechanisms may be more important. 2 references.

001757 Raskin, A. Psychopharmacology Research Branch, NIMH, Rockville, MD 20014 **A selected review of anxiolytics, neuroleptics, and antidepressants in psychogeriatrics.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 43-48).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the clinical efficacy and adverse effects of selected anxiolytic, antidepressant, and neuroleptic drugs commonly used in treating psychiatric disturbances in the elderly were reviewed. It is noted that haloperidol, doxepin, and oxazepam are particularly useful in el-

derly patients, since their central and peripheral effects are less incapacitating and harmful to the elderly than comparable drugs. The major signs and symptoms of anxiety, depression, and psychotic behavior in geriatric patients are discussed, and symptoms that characterize these states in the elderly are distinguished from those seen in middle aged and young patients. 22 references. (Author abstract modified)

001758 Roberts, Charles R. 100 State St., Apt. 20, Teaneck, NJ 07666 **Psychological treatment of obesity with phentermine resin as an adjunct.** American Journal of Psychiatry. 135(8):936-939, 1978.

The treatment of obesity with phentermine resin as an adjunct to therapy was assessed. Twelve patients who had demonstrated only a minimal response to psychiatric treatment alone for their obesity were treated with a combination of psychotherapy and an anorectic, phentermine resin. Psychotherapy was directed toward developing an awareness of the underlying anxiety related to the problem of obesity and fostering thje subsequent ability to change the pattern of overeating. All 12 patients were treated succesfully, and 9 reached ideal weight. Weight loss was maintained or additional weight was lost when the medication was discontinued. 10 references. (Author abstract modified)

001759 Rosen, Herbert J. 77 Union Street, Dover, NJ 07801 **Double-blind comparison of haloperidol and thioridazine in geriatric outpatients.** Journal of Clinical Psychiatry. 40(1):17-20, 1979.

Haloperidol and thioridazine were compared in a double-blind study of 56 geriatric outpatients in whom abnormal mood and behavior were associated with decline in the aged. Patients improved significantly with both drugs over the 6 week study period, but there was a significantly larger increase in the Wechsler Memory Scale scores of patients treated with haloperidol than those treated with thioridazine. These results confirm the therapeutic efficacy of both drugs in these patients and suggest that haloperidol should be recommended for patients who would benefit from the increased alertness that may accompany relief of symptoms. 7 references. (Author abstract)

001760 Shoulson, Ira; Goldblatt, David; Charlton, Maurice; Joynt, Robert J. Department of Neurology, University of Rochester Medical Center, 601 Elmwood Avenue, Rochester, NY 14642 **Huntington's disease: treatment with muscimol, a GABA-mimetic drug.** Annals of Neurology. 4(3):279-284, 1978.

Muscimol, a gamma-aminobutyric acid (GABA) analogue that exerts potent and specific agonist effect on GABA receptors, was administered orally to 10 patients with Huntington's disease. In this double-blind study, muscimol treatment did not result in improvement of the patients' cognitive or motor functions. Muscimol did ameliorate chorea in the most severely hyperkinetic p;atient, but the GABA analogue was associated with the appearance of dystonic features, EEG changes, and behavioral alterations in some patients. These findings support a functional relationship between GABA activity and the genesis of dystonia and EEG abnormalities in humans. The therapeutic failure of muscimol indicates that the clinical features of Huntington's disease cannot be attributed solely to GABA disturbance. 31 references. (Author abstract modified)

001761 Solow, Robert A. Department of Psychiatry, University of California School of Medicine, Los Angeles, CA **Psychopharmacology with adolescents: a current review.** In: Feinstein, S., Adolescent psychiatry. Chicago, University of Chicago Press, 1978. 521 p. Vol. 6. (p. 480-494).

Psychopharmacology for adolescents is explored, with the admonition that adolescents do not respond to all medications as do adults and often respond differently from younger children. Topics discussed include: phenothiazines, piperazines, butyrophenones, thioxanthenes, rauwolfia alkaloids, tricyclic derivatives, monoamine oxidase inhibitors, lithium carbonate, stimulants, minor tranquilizers, and the placebo. It is maintained that psychiatrists treating adolescents need specific drug information for this age group, and that therapeutic strategies should come from an adequate evaluation of the patient's problem with a consideration of the patient's individual needs and an open attitude to a treatment program which may include many other modalities. 91 references.

001762 Spodak, Michael K.; Falck, Z. Ann; Rappeport, Jonas R. Falck: Dept. of Psychiatry, John Hopkins Hospital, Baltimore, MD **The hormonal treatment of paraphiliacs with depo-provera.** Criminal Justice and Behavior. 5(4):304-314, 1978.

The long-term use of medroxyprogesterone acetate (MPA; Depo-provera) and cyproterone acetate to reduce the uncontrollable sexual urges and behaviors of rapists and child molesters is discussed. These drugs are used to decrease the functional level of the male hormone, testosterone. This decreases sexual drive and allows the offender to gain greater control, and in some cases, complete control of his aggressive sexual Guidelines for the use of these chemical agents are presented, and their effects and side-effects are described. Several case histories are presented. Although MPA is still considered experimental in man, it has proven to be an effective adjunct to psychotherapy in reducing the deviant urges of many patients who did not respond to other forms of treatment. 7 references. (Author abstract modified)

001763 Sprague, Robert L. Institute for Child Behavior and Development, University of Illinois, Champaign, IL 61801 **Psychopharmacology of the retarded: present and future.** Psychopharmacology Bulletin. 14(4):63-65, 1978.

In a paper presented at the session on new approaches in childhood psychopharmacology, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the development of legal guidelines for the psychopharmacological treatment of retarded citizens is reviewed. Noting that psychopharmacological treatment of retarded people is undergoing a legal and regulatory revolution, further standards for psychopharmacological treatment of retarded persons are predicted. It is contended that scientific and medical committees have not kept pace with the legal developments by providing needed empirical data and astute clinical judgment necessary for wise legal decisions. 20 references.

001764 Stern, Gerald; Lees, Andrew. University College Hospital, London, England **Bromocriptine in Parkinson's disease.** British Journal of Hospital Medicine (London). 20(6):666, 668, 670, 1978.

A number of long-term controlled studies to determine the potency and role of bromocriptine in the management of Parkinson's disease are discussed. These have all confirmed that bromocriptine has antiparkinsonian qualities, but there is little agreement concerning the therapeutic indications and its efficacy in the long-term. Toxic side-effects are common with bromocriptine and 25% to 40% of patients are unable to tolerate therapeutic doses of this drug. It is concluded that at present the indications for bromocriptine treatment in Parkinson's disease are few. 26 references.

001765 Surwillo, Walter W.; Shafii, Mohammad; Barrett, Curtis L. Department of Psychiatry and Behavioral Sciences, University of Louisville School of Medicine, P.O. Box 35260, Louisville, KY 40232 **Gilles de la Tourette syndrome: a 20-month study of the effects of stressful life events and haloperidol on**

symptom frequency. Journal of Nervous and Mental Disease. 166(11):812-816, 1978.

The frequency of tics in a 10-year-old boy suffering from Gilles de la Tourette syndrome was investigated in the laboratory and at home using counts of tics made by the parents. The study spanned 20 months during which the patient was treated with haloperidol. Parent's counts were reliable and valid. Stressful life events overcame positive medication effects, and symptom level varied markedly with the activities in which the child engaged. Such situational variability may explain the previously reported waxing and waning of symptoms. Findings also suggested that specific counseling be given when haloperidol is prescribed in order to prepare parents and patients for any apparent worsening of the disorder that may actually be due to the presence of stressful life events. 10 references. (Author abstract modified)

001766 Tsuji, Yukie. Fukui Prefectural Mental Hospital, Fukui-ken, Japan **My involvement with severely handicapped children.** Japanese Journal of Child Psychiatry (Tokyo). 19(1):34-37, 1978.

Suggestions for dealing with behavioral problems of severely handicapped children are discussed. Detailed descriptions of three cases are provided. In the first case, a child with frequent attacks of myoclonia type seizures failed to respond to medication, yet great progress was made when joint effort was channeled into enlarging the child's horizon, in spite of his handicap, rather than trying to cope with only his medical problems. In the second case, however, medication was instrumental in putting a child's hyperactivity under control. The third case proved to be a failure because a nonhandicapped person's values were imposed on an introverted, multiply handicapped person. It is concluded that there is no uniform procedure for handling the severely handicapped.

001767 Yesavage, Jerome A.; Tinklenberg, Jared R.; Hollister, Leo E.; Berger, Philip A. Dept. of Psychiatry and Behavioral Sciences, Stanford Univ. School of Medicine, Stanford, CA 94305 **Vasodilators in senile dementias: a review of the literature.** Archives of General Psychiatry. 36(2):220-223, 1979.

The literature on drugs with primary vasodilator action and drugs with mixed vasodilator and metabolic effects is reviewed in order to reach a final conclusion about efficacy. The rationale for the use of vasodilators in the aged has changed from the attempt to increase cerebral blood flow to the attempt to improve cerebral metabolism. Review of 102 studies of eight vasodilators showed that significantly more controlled studies claimed practical clinical benefit from drugs supposed to improve neuronal intermediary metabolism with secondary vasodilation than from durgs supposed to have only vasodilator action. Studies of both classes of drugs often suffered from poor study design, inappropriate and inconsistent application of outcome measurements, as well as negative bias due to selection of severely demented subjects. Recommendations for future studies and for a more standard methodology in these studies are given. 102 references. (Author abstract modified)

12 PSYCHOTOMIMETIC EVALUATION STUDIES

001768 Allen, R. Michael; Young, Steven J. Department of Psychiatry, Texas Tech University Regional Academic Health Center, 4800 Alberta, El Paso, TX 79905 **Phencyclidine-induced psychosis.** American Journal of Psychiatry. 135(9):1081-1084, 1978.

The symptomatology of phencyclidine (PCP) induced psychosis was examined. PCP had been taken by individuals who believed they were taking tetrahydrocannabinol. During a 13 month period, nine patients with PCP induced psychosis were admitted to an army hospital. They exhibited hostility, agitation, and tangentiality and had delusions of influence and religious grandiosity. Six subjects reported auditory hallucinations, and four were disoriented in at least one sphere. Despite treatment with antipsychotic medication, the psychotic episodes often persisted for more than 30 days. The clinical findings of prolonged psychotic reactions, together with previous reports of the effects of PCP, suggests that PCP provides an intriguing drug model for schizophrenia. 11 references. (Author abstract modified)

001769 Mamelak, M. Department of Psychiatry, Sunnybrook Hospital, University of Toronto, Toronto, Ontario, Canada **An amphetamine model of manic depressive illness.** International Pharmacopsychiatry (Basel). 13(4):193-208, 1978.

An amphetamine model of manic-depressive illness is described. Many features of manic depressive illness can be mimicked in humans by the use and withdrawal of amphetamines, and high doses of the drug induce a syndrome virtually indistinguishable from paranoid schizophrenia. A review of the biochemical and physiological effects of the amphetamines reveals the operation of specific homeostatic or adaptive neural mechanisms which may operate in adaptation to psychological stress. Evidence is presented that the mechanisms malfunction in manic depressive and acute schizophrenic states, accounting for many of the clinical features of these conditions. 86 references. (Author abstract modified)

001770 Natale, Michael; Kowitt, Michael; Dahlberg, Charles C.; Jaffe, Joseph. Department of Psychology, University of Pennsylvania, 3813 Walnut Street, Philadelphia, PA 19174 **Effect of psychotomimetics (LSD and dextroamphetamine) on the use of figurative language during psychoanalysis.** Journal of Consulting and Clinical Psychology. 46(6):1579-1580, 1978.

The effect of LSD, dextroamphetamine, and a placebo on patients' use of figurative language in psychoanalytic sessions was examined. A longitudinal design was performed on three male patients who volunteered to receive each drug (LSD, 50-100u, dextroamphetamine, 15mg, and placebo) seven times over a period of 1.5years. The patients, analyst, and raters were all blind concerning the drug condition. Forty min verbatim transcripts were scored for figurative language by two trained raters. Results show that for two of the three patients, the use of nonliteral language, in particular, novel figurative phrases, was significantly increased by LSD. 6 references. (Author abstract)

13 MECHANISM OF ACTION: PHYSIOLOGICAL, BIOCHEMICAL AND PHARMACOLOGICAL

001771 Biggs, John T.; Preskorn, Sheldon H.; Ziegler, Vincent E.; Rosen, Samuel H.; Meyer, David A. Dept. of Psychiatry, Washington University School of Medicine, 4940 Audubon Ave., St. Louis, MO 63110 **Dosage schedule and plasma levels of doxepin and desmethyldoxepin.** Journal of Clinical Psychiatry. 39(10):740-742, 1978.

Plasma levels of doxepin and its metabolite desmethyldoxepin were compared in patients receiving equal amounts of doxepin in a single or a three times per day schedule. Seven depressed patients were administered doxepin hydrochloride at 1000, 1600, and 2000 hours and repeated after changing the dosage schedule to a single daily bedtime dose at 2200 hours. Plasma levels were measured at 1000, 1200, 1500, and 1800 hours. None of the individual patients showed clinically significant changes in their plasma levels of tricyclic antidepressant on the 2 dosage schedule. No difference in the clinical condition of the patients was detected on the 2 dosage schedules using the Zung Self Rating Depression Scale; however, patients experienced more morning sedation when administered the single dose. Pharmacological

support is provided for the administration of doxepin on a once daily schedule. 15 references. (Author abstract modified)

001772 Boullin, D. J.; Molyneuz, D.; Roach, B. MRC Unit and University Department of Clinical Pharmacology, Radcliffe Infirmary, Oxford, OX2 6HE, England **The binding of haloperidol to human blood platelets and interactions with 5-hydroxytryptamie and dopamine.** British Journal of Pharmacology (London). 63(3):561-566, 1978.

The binding of (3H)-5-hydroxytryptamine (5-HT), (3H)-haloperidol, and (3H)-dopamine to human blood platelets was investigated, and the effects of unlabelled haloperidol on (3H)-5-HT binding and ()-butaclamol and (-)-butaclamol on (3H)-halo peridol were studied. Scatchard analysis did not show any specific binding of (3H)-halopenridol or (3H)-dopamine to platelets, but two binding sites were identified for binding of (3H)-5-HT. Unlabelled haloperidol reduced the binding of 5-HT in concentrations comparable to those inhibiting 5-HT induced platelet aggregation; ()-butaclamol and (-)-butaclamol did not affect the binding of (3H)-haloperidol. It is concluded that haloperidol binding represents saturation of the platelet membrane, and that the platelet is not a suitable model for investigation of dopamine-drug interaction. 9 references. (Author abstract)

001773 Boullin, D.J.; Glenton, Patricia A.M. MRC Unit, Radcliffe Infirmary, Oxford OX2 6HE, England **Characterization of receptors mediating 5-hydroxytryptamine-and catecholamine-induced platelet aggregation, assessed by the actions of alpha-and beta-blockers, butyrophenones, 5-HT antagonists and chlorpromazine.** British Journal of Pharmacology (London). 62(4):537-542, 1978.

Blood platelets from normal human volunteers were isolated and aggregated in vitro with 5-hydroxytryptamine (5-HT), noradrenaline (NA), dopamine and N-dimethyldopamine (DMDA) and the effects of 5-HT antagonists, alpha-adenoceptor and adrenoceptor blocking agents, butyrophenones and chlorpromazine upon aggregation induced by the four amines were investigated. Only the 5-HT antagonists, chlorpromazine and spiroperidol were potent inhibitors of 5-HT induced agrgregation, and only phentolamine was a potent inhibitor of the catecholamine induced aggregation. Evidence was obtained for two populations of receptors, one for 5-HT and one for the three catecholamines. 21 references. (Author abstract)

001774 Brown, Walter A.; Laughren, Thomas P.; Williams, Bradford W. Providence Veterans Administration Hospital, Providence, RI **Neuroendocrine correlates of clinical response during withdrawal from chlordiazepoxide.** Communications in Psychopharmacology. 2(3):251-254, 1978.

Six men who had been taking chlordiazepoxide for anxiety symptoms were studied during maintenance (2 weeks), placebo treatment (4 weeks), and return to chlordiazepoxide (4 weeks) to determine neuroendocrine correlates of clinical response during withdrawal. The three Ss who experienced distress on placebo showed concomitant elevation in growth hormone (GH), while the three who did not experience distress on placebo maintained basal levels of GH. Distressed Ss showed elevations in serum cortisol as did one nondistressed S. Ss were also evaluated weekly on the Profile of Mood States and had blood sampled for prolactin. The data raise the possibility that both GH release and withdrawal symptoms are manifestations of a similar or linked neurophysiologic process. 6 references. (Author abstract modified)

001775 Burch, Jane; Hullin, R. P. Department of Biochemistry, University of Leeds, Leeds, England **The absorption rate and bioavailability of amitriptyline in the form of lentizol.** Neuropharmacology (Oxford). 17(12):1069-1071, 1978.

In a paper presented at the July 1978 meeting of the British Association for Psychopharmacology, held at the University of Wales Institute of Science and Technology at Cardiff, a comparative study of the bioavailability of amitriptyline in standard tablet form (Saroten) and in a sustained release preparation (Lentizol) is described. Following oral Saroten administration in healthy volunteers, absorption rates and bioavailability were fairly consistent; plasma amitriptyline concentrations peaked at 3-4 hours and the ratios of peak height to total area were comparable across subjects. In contrast, the rate of absorption and bioavailability of Lentizol varied greatly across subjects and trials. Results indicate that the behavior of Lentizol in the human alimentary tract is extremely variable and bears little relation to its rate of dissolution in vitro. 3 references.

001776 Caldwell, John. Dept. of Biochemical and Experimental Pharmacology, St. Mary's Hospital Medical School, London W2 1PG, England **The significance of phase II (conjugation) reactions in drug disposition and toxicity.** Life Sciences (Oxford). 24(7):571-578, 1979.

The importance of phase II (conjugation) reactions in drug disposition and toxicity is discussed. Although phase II reactions were the first metabolic reactions of foreign compounds to be discovered, phase I processes (oxidations, reductions, and hydrolyses) have received the most attention from researchers. It is argued that conjugation reactions should not be regarded as inevitable and predictable processes, since the conjugation of man substrates by a number of reactions may be saturated at concentrations encountered in the whole animal. In addition, a number of combinations of substrate and conjugation reactions exhibit marked defects in certain species and in certain human phenotypes. Any alteration in the capacity of the organism to effect such reactions has consequences for the biological activity, pharmacokinetics, and elimination of compounds metabolized by that reaction. 43 references. (Author abstract modified)

001777 Coasslo, P.; Sarrazin, M.; Sari, J. C.; Briand, C. Faculte de Pharmacie, 27 Bd Jean Moulin, F-13385 Marseille, Cedex 4, France **Microcalorimetric studies on the binding of some benzodiazepin derivatives to human serum albumin.** Biochemical Pharmacology (Oxford). 27(24):2787-2792, 1978.

A microcalorimetric method was used to characterize interactions between benzodiazepines and human serum albumin (HSA). The kinetic parameters of the interactions of HSA with, chlordiazepoxide, diazepam, dipotassium chlorazepate, nitrazepam, and flurazepam were determined at various pH, ionic strength, and electrolyte support conditions. Results indicate that both electrostatic and hydrophobic interactions occur, in proportion to each drug's molecular structure. 22 references. (Author abstract modified)

001778 Costa, Jonathan L.; Pettigrew, Karen D.; Murphy, Dennis L. Clinical Neuropharmacology Branch, NIMH, Bethesda, MD 20014 **Electron probe microanalysis of changes in dense-body phosphorus and calcium content following alterations in platelet serotonin levels.** Biochemical Pharmacology (Oxford). 28(1):23-26, 1979.

The dense body phosphorus and calcium contents of intact, washed human platelets were evaluated, following procedures that altered total or vesicular serotonin (5-HT) content. Platelet vesicular 5-HT stores were labeled by incubation of platelet rich plasma with (3H)5-HT, and washed cells were treated for varying time periods with thrombin, the ionophore X537A, or the metabolic poisons antimycin A plus 2-deoxyglucose. After each treatment, (3H)5-HT remaining in the cells was measured by formaldehyde fixation and scintillation counting. Air dried whole mounts were prepared from the same cell suspensions,

and the calcium and phosphorus content of dense bodies was evaluated by electron microprobe X-ray analysis. Results indicate that a large increase or decrease in vesicular (3H)5-HT can occur without any measurable change in dense body calcium or phosphorus. In addition, the loss of (3H)5-HT, calcium, and phosphorus apparently occurs at different times during platelet incubation with metabolic poisons, suggesting that continued maintenance of vesicular stores of each of the three substrates is linked in a distinct manner to cellular energy production. 15 references. (Author abstract)

001779 Cotes, P. Mary; Crow, T. J.; Johnstone, Eve C.; Bartlett, W.; Bourne, Rachel C. Division of Clinical Chemistry, Clinical Research Centre, Northwick Park Hospital, Watford Road, Harrow, Middlesex HA1 3UJ, England **Neuroendocrine changes in acute schizophrenia as a function of clinical state and neuroleptic medication.** Psychological Medicine (London). 8(4):657-665, 1978.

Changes in levels of prolactin, growth hormone, luteinizing hormone, and follicle stimulating hormone in serum, and testosterone in plasma, were studied in 38 patients with acute schizophrenic illnesses in a 4 week, double-blind comparison of the 2 isomers of lupenthixol and placebo. Only prolactin showed changes which could be related either to changes in clinical state or to the effects of medication. Although there was a significant relationship between prolactin level and antipsychotic effect in patients on alpha-flupenthixol, in the individual case, prolactin level was not a strong predictor of therapeutic response. It is concluded that dopamine receptor blockade may permit other, and slower, changes to take place and it is these changes, rather than dopamine receptor blockade itself, which are reflected in clinical improvement. 40 references. (Author abstract modified)

001780 Cronson, Alvin J.; Flemenbaum, Abraham. Texas Tech University School of Medicine, Department of Psychiatry, P.O. Box 4569, Lubbock, TX 79410 **Antagonism of cocaine highs by lithium.** American Journal of Psychiatry. 135(7):856-857, 1978.

Five clinical cases are reported that appear to support the hypothesis of an inhibition of cocaine highs by lithium. The inhibitory mechanism of action of lithium is believed to be indirect: by improving a masked affective disorder, lithium may result in a decreased need for the highs obtained from a drug. It is concluded that the potential use of lithium in the treatment of drug abuse deserves further study. 9 references.

001781 Davis, G. C.; Buchsbaum, M. S.; Bunney, Jr., W. E. Biological Psychiatry Branch, NIMH, Bethesda, MD 20014 **Naloxone decreases diurnal variation in pain sensitivity and somatosensory evoked potentials.** Life Sciences. 23(14):1449-1460, 1978.

To examine evidence that the narcotic antagonist, naloxone, decreases diurnal variation in pain sensitivity and somatosensory evoked potentials (EPs) 35 normal Ss had their EPs recorded and were tested on a psychophysi- cal pain judgment task in the morning and afternoon sessions. Ss tested in the morning were significantly less pain sensitive than those tested in the afternoon. EP measures were consistent with decreased sensitivity in the morning. In a second experiment, 12 normal Ss also received naloxone (2mg, i.v.)in a double-blind trial (6 in the morning and 6 in the afternoon). Naloxone hyperalgesia effects on the EP were present in the morning and absent in the afternoon. Results are consistent with the hypothesis that endorphins at least partially mediate diurnal variations in pain appreciation. They contribute to previous research which demonstrates that beta-lipotropin, a possible precursor of the endogenous opiate bata-endorphine, shares a diurnal rhythm with adrencorti cotropin. 28 references. (Author abstract modified)

001782 Davis, Kenneth L.; Hollister, Leo E.; Berger, Philip A.; Vento, Adela L. Veterans Administration Hospital, Palo Alto, CA **Studies on choline chloride in neuropsychiatric disease: human and animal data.** Psychopharmacology Bulletin. 14(4):56-58, 1978.

In a paper presented at the session on the uses of acetylcholine precursors in the diagnosis and treatment of neurological and psychiatric disease, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, human and animal studies on choline chloride in neuropsychiatric diseases are reviewed. Choline chloride administration to Huntington's disease patients, to patients suffering from tardive dyskinesia, and to rats in an animal model of tardive dyskinesia supports the efficacy of choline administration for tardive dyskinesia and Huntington's disease. However, only some patients with Huntington's disease are aided by either physostigmine or choline chloride. 4 references.

001783 Friis, Mogens Laue; Christiansen, Johannes. Dept. of Neurology, Hvidovre Hospital, University of Copenhagen, Kettegard Alle 30, DK-2650 Hvidovre, Denmark **Carbamazepine, carbamazepine-10,11-epoxide and phenytoin concentrations in brain tissue of epileptic children.** Acta Neurologica Scandinavica (Kobenhavn). 58(2):104-108, 1978.

Carbamazepine (CBZ), carbamazepine-10,11-epoxide (CBZ-epoxide), and phenytoin (DPH) were measured in brain tissue in two CBZ treated epileptic children undergoing temporal lobectomy. The CBZ concentration in brain tissue was higher or equal to the plasma concentration. Brain/plasma ratio for CBZ was 1.0for the first child and 1.4for the second child. Brain/plasma ratio of CBZ-epoxide was 1.0for both children. Concomitant treatment with DPH increased the percentage of CBZ-epoxide relative to CBZ in both brain and plasma. In white brain substance the concentration of CBZ, CBZ-epoxide, and DPH was higher or equal to the corresponding concentration in gray substance. No major age related differences in the distribution of antiepileptic drugs between brain and plasma in these two children compared to adult epileptic patients were noted. A new quantitative thin layer chromatography method for the determination of DPH and phenobarbital in brain tissue and plasma is described. 9 references. (Author abstract modified)

001784 Galzigna, L.; Terribile, P. M.; Rizzoli, A. A. Instituto di Biochimica dell'Universita, Padova, Padova, Italy **/Considerations on the potential antipsychotic capacities of a new synthetic beta-blocking agent./** Considerazioni sulle potenziali capacita antipsicotiche di un nuovo beta bloccante di sintesi. Rassegna di Studi Psichiatrici (Siena). 67(3):475-488, 1978.

The effects of a new synthetic compound, 1,N02-hydroxyphenyl,N-benzoyl-alanine (GAL-1) examined. The compound were shows strong properties as an electron donor, as a central analgesic, and has strong beta-blocking effects. The drug shows no inhibiting or stimulating effect on acetylcholinesterase or on monoamineoxidase, and does not have any toxic effects on the liver. In light of the short circuit theory, and considering the growing use of various beta-blocking drugs in the treatment of psychosis, it is postulated that this new compound can be utilized as a potential antipsychotic agent. 22 references. (Journal abstract modified)

001785 Gold, Mark S.; Redmond, D. Eugene, Jr.; Kleber, Herbert D. Fiar Oaks Hospital, 10 Prospect St., Summit, NJ 07901 **Noradrenergic hyperactivity in opiate withdrawal supported by clonidine reversal of opiate withdrawal.** American Journal of Psychiatry. 136(1):100-101, 1979.

Research in support of clonidine's efficacy as an effective nonopiate treatment for opiate withdrawal is reported, along

with data which support the role of noradrenergic hyperactivity as the neurobiological substrate for opiate withdrawal. The data were obtained from six male addicts who were administered 5 micrograms of clonidine after discontinuation of chronic methadone treatment, and to six heroin addicts who exhibited signs and symptoms of opiate withdrawal. The findings also indicate that opiate withdrawal may be a model for naturally occurring anxiety of panic states in man and suggest anxiolytic activity for clonidine. 10 references.

001786 Greenblatt, D. J.; Harmatz, J. S.; Shader, R. I. Clinical Pharmacology Unit, Massachusetts General Hospital, Boston, MA 02114 **Factors influencing diazepam pharmacokinetics: age, sex, and liver disease.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 16(4):177-179, 1978.

Published data on the effect of cirrhosis on diazepam pharmacokinetics were reanalyzed to determine how age, sex, and body weight may have influenced the conclusions. Diazepam half-life and weight corrected volume of distribution (Vd) were significantly larger in patients with cirrhosis than in controls. Weight corrected diazepam clearance was significantly reduced in cirrhotics as compared with controls. Multiple stepwise regression analysis, however, revealed that age and liver disease were of approximately equal importance as determinants of diazepam elimination of half-life. Age, sex, and liver disease all influenced Vd, but liver disease was by far the most important determinant of diazepam clearance. It is concluded that age, sex, and body size can have an important influence on the pharmacokinetics of drugs and should be included as independent variables in pharmacokinetic studies. 11 references (Author abstract modified)

001787 Growdon, John H. Dept. of Neurology, Tufts-New England Medical Center, Boston, MA **Effects of choline on tardive dyskinesia and other movement disorders.** Psychopharmacology Bulletin. 14(4):55-56, 1978.

In a paper presented at the session on the uses of acetylcholine precursors in the diagnosis and treatment of neurological and psychiatric diseases, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the effects of choline on tardive dyskinesia and other movement disorders are reviewed. Studies of choline or lecithin administration to patients with Huntington's disease and tardive dyskinesia, and to normal volunteers are reviewed. These studies indicate that both choline chloride and lecithin are safe for human consumption. Both are well tolerated and significantly increase the amount of free choline in the blood that is delivered to the brain for acetylcholine synthesis. 16 references.

001788 Jenden, Donald J. Department of Pharmacology, School of Medicine, University of California, Los Angeles, CA 90024 **The neurochemical basis of acetylcholine precursor loading as a therapeutic strategy.** In: Davis, K., Brain Acetylcholine and Neuropsychiatric Disease. New York, Plenum Press, 1978.

Clinical evidence for the effectiveness of acetylcholine precursor loading in alleviating deficits in central cholinergic function is explored. It has been suggested that deficits in central cholinergic function may play a role in psychopathological states. Acetylcholine synthesis in the brain and its regulation are reviewed, and the experimental, clinical, and laboratory evidence of the impact of precursor loading is examined. The evidence indicates that a sufficiently large dose of choline can increase acetylcholine levels in some areas of the brain and other structures, and that this increase may occur primarily in cholinergic cell bodies. Summaries of clinical data on choline administration are presented. 199 references.

001789 Jobson, Kenneth; Linnoila, Markku; Gillam, John; Sullivan, John L. Tennessee Psychiatry and Psychopharmacology Clinic, 9401 Parkwest Blvd., Knoxville, TN 37919 **Successful treatment of severe anxiety attacks with tricyclic antidepressants: a potential mechanism of action.** American Journal of Psychiatry. 135(7):863-864, 1978.

Dramatic resolution of severe anxiety attacks in three patients with plasma tricyclic doses clearly below those reported for successful management of severe depression is reported. The postulated mechanism of action may be MAO inhibition, because in vivo MAO inhibition in human platelets can occur at very low tricyclic plasma levels and has been reported to correlate with the sedative effects of the tricyclics. Blockade of central beta receptors or of adrenergic alpha receptors is rejected as the mechanism of action. 9 references.

001790 Jostell, K.-G.; Agurell, S.; Allgen, L.-G.; Kuylenstierna, B.; Lindgren, J.-E.; Aberg, G.; Osterlof, G. Medical Department, Astra Lakemedl AB, S-151 85 Sodertalje, Sweden **Pharmacokinetics of clomethiazole in healthy adults.** Acta Pharmacologica et Toxicologica (Kobenhavn). 43(3):180-189, 1978.

The systemic availability of clomethiazole was assessed by comparing blood levels after intravenous and oral administration to human volunteers. Clomethiazole was rapidly absorbed after oral administration, particularly when administered as a syrup. The time/blood concentration profiles were consistent with a two compartment open model. Mean elimination half-lives of 3.6-5.0hours were found for different formulations and administration routes. A means system clearance time of 49ml/minute/kg was found for clomethiazole after i.v. administration. The blood/plasma distribution of clomethiazole was 0.76 at 37 degrees. A sensitive mass fragmentographic assay for the determination of clomethiazole in blood/plasma down to levels fo ing/ml is described. 12 references. (Author abstract modified)

001791 Kaufman, Seymour. Laboratory of Neurochemistry, NIMH, Bethesda, MD 20014 **Establishment of tetrahydrobiopterin as the hydroxylase cofactor and a review of some recent studies in man.** Psychopharmacology Bulletin. 14(4):38-40, 1978.

In a paper presented at the session on the biochemistry and potential use of hydroxylase cofactors as an index of aminergic activity at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the establishment of tetrahydrobiopterin as the hydroxylase cofactor is described, and some recent studies in man are reviewed. A case of phenylketonuria (PKU) is described which supports the conclusion that blockage of the biosynthetic pathway for biopterin is possible. Studies of patients with inborn errors in the metabolism of biopterin have greatly expanded knowledge of the physiological role of biopterin. 15 references.

001792 Kraus, J. W.; Desmond, P. V.; Marshall, J. P.; Johnson, R. F.; Schenker, S.; Wilkinson, G. R. Department of Medicine, Vanderbilt University School of Medicine, Nashville, TN 37232 **Effects of aging and liver disease on disposition of lorazepam.** Clinical Pharmacology and Therapeutics. 24(4):411-419, 1978.

The disposition of lorazepam after intravenous administration (2mg) was investigated in patients with alcoholic cirrhosis and acute viral hepatitis and in normal subjects ranging in age from 15-73 years. No statistically significant age dependent relationship in the drug's pharmacokinetic parameters were observed. Cirrhosis was associated with a doubling of the mean elimination half life (from 21.7to 41.2hours). This was due to a similar increase in the volume of distribution of lorazepam, caused by a reduction in the extent of the drug's plasma binding. No changes in systemic plasma clearance of lorazepam or in urinary recovery of the conjugated drug were detected. No significant

changes in lorazepam kinetics were found in patients with acute viral hepatitis. It is concluded that the degree of impairment, if any, in the metabolism of lorazepam in patients with liver disease is considerably less than that reported for certain related benzodiazepines, such as chlordiazepoxide. 24 references. (Author abstract modified)

001793 Kreek, Mary Jeanne; Hachey, David L.; Klein, Peter D. Rockefeller University, 1230 York Avenue, New York, NY 10021 **Stereoselective disposition of methadone in man.** Life Sciences (Oxford). 24(10):925-932, 1979.

Stable isotope labeled methadone (pentadeuteromethadone) was used in conjunction with gas chromatography/chemical ionization mass spectrometry to study plasma disappearance rates and urinary excretion of pharmacologically active R-(-)-methadone (l-methadone) and inactive S-()-methadone (d-methadone) in three adult methadone maintenance patients. In all three cases, the analgesically active enantiomeric form of the drug had a significantly longer elimination half-life (51.7-61.8hours) than did the inactive form (31.8-37.0hours) when studied in a steady state. The ratio of drug elimination half-lives ranged between 1.40 and 1.94. The plasma disappearance of the active enantiomer was slower than that of the inactive enantiomer. 29 references. (Author abstract modified)

001794 Lancranjan, Ioana; Del Pozo, E.; Ohnhaus, E. Experimental Therapeutics Department, Sandoz Ltd., CH-4002, Basle, Switzerland **Inhibitory effect of guanfacine, a central alpha-adrenoceptor agonist, on prolactin secretion stimulated by insulin-induced hypoglycemia.** Journal of Clinical Endocrinology and Metabolism. 47(3):671-674, 1978.

In six normal male volunteers, oral administration of guanfacine, a central alpha-adrenoceptor agonist, had no effect on prolactin (PRL) release induced by 5mg intravenous metoclopramide. The same treatment with guanfacine in six other normal subjects significantly reduced PRL secretion stimulated by insulin induced hypoglycemia. These results suggest that an adrenergic pathway, hypothalamic or extrahypothalamic, may be involved in the inhibitory control of PRL secretion. 19 references. (Author abstract)

001795 Laughren, Thomas P.; Brown, Walter Armin; Petrucci, June A. no address **Effects of thioridazine on serum testosterone.** American Journal of Psychiatry 135(8):982-984, 1978.

Serum testosterone and several psychological and behavioral measures were evaluated in patients under treatment with thioridazine. Seven male outpatients age 34 to 59 years old, and with diagnoses of chronic schizophrenia, hysterical neurosis, and alcoholism were monitored during chronic treatment, during placebo substitution, and following medication resumption. Serum testosterone was measured by laboratory personnel blind to the study protocol using radioimmunoassay with column chromatography to separate testosterone from competing steroids. Most testosterone levels were within normal range for men during all phases of the study. Serum testosterone levels were significantly lower during drug than placebo periods. The Brief Psychiatric Rating Scale, the Profile of Mood States, and a sexual function scale for evaluation of sexual activity and dysfunction were completed by all patients. Sexual activity levels did not appear to change during the study. 9 references.

001796 Leebaw, Wayne F.; Lee, Louyse, A.; Woolf, Paul D. Endocrine Metabolism Unit, Department of Medicine, University of Rochester Medical Center, 601 Elmwood Avenue, Rochester, NY 14642 **Dopamine affects basal and augmented pituitary hormone secretion.** Journal of Clinical Endocrinology and Metabolism. 47(3):480-487, 1978.

The effect of dopamine (DA) infusion on basal pituitary hormone levels and on augmented hormonal release induced by insulin hypoglycemia thyrotropin releasing hormone (TRH), and gonadotropin releasing hormone (GnRH) were investigated in six healthy male volunteers. Results indicate that DA has an inhibitory as well as stimulatory role in the regulation of growth hormone secretion. DA inhibited centrally and peripherally mediated prolactin secretion and blunted the luteinizing hormone response to GnRH. In addition, DA lowered both basal and TRH mediated thyrotropin stimulating hormone release. 53 references. (Author abstract modified)

001797 Leonard, Edward J.; Skeel, Alison; Chiang, Peter K.; Cantoni, Giulio L. Immunopathology Section, Laboratory of Immunobiology, National Cancer Institute, Bethesda, MD 20014 **The action of the adenosylhomocysteine hydrolase inhibitor, 3-deazaadenosine, on phagocytic function of mouse macrophages and human monocytes. (unpublished paper)** Bethesda, MD, National Cancer Institute, 1978. 11 p.

To examine the process of transmethylation, which has important implications for bacterial motility, the action of the adenosylhomocysteine hydrolase inhibitor, 3-deazaadenosine, on phagocytic function of mouse macrophages and human monocytes was studied. The compounds caused profound inhibition of phagocytosis of opsonized erythrocytes by mouse resident peritoneal macrophages in vitro. The inhibition was evident at concentrations as low as .0000002M, and increased with increasing concentration and time of exposure to the analogue. It was not associated with detachment of the macrophage monolayers or with loss of cell viability. Although the inhibition was not reversible, progression of the functional impairment was interrupted by washing out the analogue. In contrast, phagocytic function of human blood monocytes was unaffected by 3-deazaadenosine. 19 references. (Author abstract modified)

001798 Levy, Charles L.; Carlson, Harold E.; Sowers, James R.; Goodlett, Richard E.; Tourtellotte, Wallace W.; Hershman, Jerome M. Carlson: Medical Research Service, VA Wadsworth Hospital Center, Los Angeles, CA 90073 **Growth hormone and prolactin secretion in Huntington's disease.** Life Sciences (Oxford). 24(8):743-749, 1979.

The secretion of growth hormone (GH) and prolactin (PRL) in response to provocative and suppressive tests was studied in 12 patients with Huntington's disease, 8 unaffected relatives, and 20 normal subjects. Prolactin responses to thyrotropin releasing hormone (TRH), chlorpromazine, L-DOPA, and apomorphine were similar in all groups, with the exception of a slightly blunted PRL response to TRH in the unaffected relatives. GH responses to L-DOPA were similar in all groups. However, patients with Huntington's disease had almost no GH response to apomorphine, while controls showed significant increases in plasma GH. These results are similar to previously reported findings in drug induced tardive dyskinesia and suggest an abnormality in dopamine mediated GH secretion in Huntington's disease. 16 references. (Author abstract modified)

001799 Loosen, Peter T.; Prange, Arthur J., Jr.; Wilson, Ian C. Clinical Research Unit, Box 7512, Dorothea Dix Hospital, Raleigh, NC 27611 **The thyrotropin response to thyrotropin-releasing hormone in psychiatric patients: relation to serum cortisol.** Progress in Neuro-Psychopharmacology (Oxford). 2(4):479-486, 1978.

In a study of the thyrotropin (TSH) response to thyrotropin releasing hormone (TRH) in psychiatric patients, the relationship between serum cortisol and TSH was studied in 15 normal Ss and in 7 depressed, 15 alcoholic, and 13 schizophrenic patients. Serum TSH was measured in the basal state and in re-

sponse to the intravenous administration of 0.5mg TRH. Basal cortisol and TSH peak response showed a significant inverse relationship in normal controls and in depressed patients. Schizophrenic patients, however, tended to show a positive correlation between these two parameters. Basal cortisol and basal TSH were inversely related in normal Ss, but in none of the patient groups. Blunted TSH responses after TRH were found in three depressed and five alcoholic patients but not in schizophrenic patients of normal controls. Data suggest that physiologic cortisol serum concentrations may suppress TRH induced TSH response in normal Ss and depressed patients, but not in schizophrenic patients, in whom cortisol tends to enhance TRH induced TSH release, suggesting an endocrine dissociation. 28 references. (Author abstract modified)

001800 Major, L. F.; Murphy, D. L.; Lipper, S.; Gordon E. Clinical Neuropharmacology Branch and Laboratory of Clinical Science, National Institute of Mental Health, Bethesda, MD 20014 **Effects of clorgyline and pargyline on deaminated metabolites of norepinephrine, dopamine and serotonin in human cerebrospinal fluid.** Journal of Neurochemistry (Oxford). 32(1):229-231, 1979.

The in vivo effect of selective monoamine oxidase (MAO A and B inhibitors (clorgyline and pargyline) on the metabolism of biogenic amines was examined. Cerebrospinal fluids were obtained from hospitalized depressed patients who were treated with either clorgyline, pargyline, or both. Homovanillic acid, the major acidic metabolite of dopamine, was significantly decreased during clorgyline as well as pargyline treatment, although pargyline caused a significantly greater reduction than clorgyline. 3-Methoxy-4-hydroxyphenylglycol, the main metabolite of norepinephrine was reduced to an equal extent by both drugs. Neither 3-methoxy-4-hydroxy-D-mandelic acid, a minor metabolite of norepinephrine, nor 3,4-dihydroxyphenylacetic acid (DOPAC), a minor metabolite of dopamine, was significantly affected by either drug. 5-Hydroxyindoleacetic acid (5-HIAA), the main metabolite of serotonin was significantly reduced by both clorgyline and pargyline. The fluorimetrically measured values for 5-HIAA were not comparable. 16 references.

001801 Oxenkrug, G. F. Laboratory of Psycho-Pharmacology, Bekhterev Psychoneurological Research Institute, Leningrad C-19, ul. Bekhterereva 3, USSR **The effect of neuroleptic derivatives of butyrophenone on the uptake of 5-HT by human blood platelets.** Journal of Pharmacy and Pharmacology (London). 30(11):740, 1978.

The effect of butyrophenone derivatives (trifluperidol, spiramid, fluanisone, haloperidol, and droperidol) on the uptake of 5-hydroxytryptamine (5-HT) by human blood platelets was investigated. All five butyrophenone derivatives inhibited 5-HT uptake, although not as strongly as did imipramine. The inhibiting effect of these compounds on 5-HT uptake by blood platelets suggests that they may inhibit 5-HT reuptake in neurons. It is suggested that the serotonergic effect of haloperidol and its derivatives may play a role in the drugs' antimanic activity. 11 references.

001802 Puzynski, Stanislaw; Bidzinski, Andrzej; Hauptmann, Miroslawa; Rode, Anna; Jakimow-Venulet, Barbara; Zaluska, Maria. Instytut Psychoneurologiczny, Al. Sobieskiego 1/9, 02-957 Warsaw, Poland /**Tryptophan and catecholamine metabolism in bipolar affective disorders.**/ Przemiana tryptofanu i katecholamin w chorobie afektywnej dwubiegunowej. Psychiatria Polska (Gdansk). 12(3):301-309, 1978.

Tryptophan and catecholamine metabolism was studied in 16 patients suffering from bipolar affective disorder (seven in the depressive state, two in the manic state, seven in remission) and 16 controls. Free and plasma bound tryptophan content and the serotonin level in plasma and blood platelets were determined. Biochemical urine analysis indicated that patients with bipolar affective disorders had a tendency toward urinary secretion of small amounts of dopamine, noradrenaline, and 3-methoxy-4-hydroxyphenylglycol. Depressive patients showed a decreased content of free tryptophan in the plasma and of 5-hydroxyindoleacetic acid in the urine. No metabolic symptoms of increased activity of the kinurenic way was established. Depressive patients undergoing amitryptiline treatment showed an increased free tryptophan, plasma serotonin, and 5-hydroxyindoleacetic acid, a phenomenon correlated with improvement of the mental state. These findings indicate that an endogenous depressive syndrome such as simple depression involves disturbances in the metabolism and distribution of tryptophan. (Journal abstract modified)

001803 Rapoport, Judith L.; Mikkelsen, Edwin J.; Ebert, Michael H.; Brown, G. Lavonne; Weise, Virginia K.; Kopin, Irwin J. Unit on Childhood Mental Illness, Building 10, Room 3N-204, National Institute of Mental Health, Bethesda, MD 20014 **Urinary catecholamines and amphetamine excretion in hyperactive and normal boys.** Journal of Nervous and Mental Disease. 166(10):731-737, 1978.

Urinary catecholamines and metabolites and urinary amphetamine excretion were examined in hyperactive and normal boys following a single dose of dextroamphetamine (0.5mg/kg) and placebo. Hyperactive children showed a significantly faster rate of excretion of amphetamine which could not be accounted for by previous exposure to drug or by signs of neurological involvement. Urinary norepinephrine (NE) was significantly higher for hyperactive than for normal children, but NE excretion did not correlated with motor activity or any measures of arousal. The single dose of amphetamine produced a significant rise in urinary epinephrine excretion for the normal children but not for the hyperactive group, supporting the notion of a more sluggish catecholamine response to stimulants for hyperkinetic children. 21 references. (Author abstract)

001804 Rech, Richard H. Dept. of Pharmacology, Michigan State University, East Lansing, MI 48823 **Brain lesions and psychostimulant drugs.** Psychopharmacology Bulletin. 14(4):35-38, 1978.

In a paper presented at the session on neurological pharmacology at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the use of brain lesion techniques in the investigation of psychostimulant drugs is discussed. Examples of drugs interacting with brain lesions to produce behavioral effects are presented to emphasize the complexity of multiple effects on interrelated brain neurotransmitter systems. It is contended that LSD type hallucinogens suppress activity in 5-HT pathways that normally maintain a discriminatory pattern of perception and response tendencies. 14 references.

001805 Reisine, Terry D.; Wastek, Gregory J.; Speth, Robert C.; Bird, Edward D.; Yamamura, Henry I. Department of Pharmacology, College of Medicine, University of Arizona Health Sciences Center, Tucson, AZ 85724 **Alterations in the benzodiazepine receptor of Huntington's diseased human brain.** Brain Research (Amsterdam). 165(1):183-187, 1979.

Benzodiazepine (BDZ) receptors were studied in postmortem brain tissue from five adult patients diagnosed as having Huntington's disease (HD). Saturation studies revealed a reduction in the total number of BDZ receptors and a decrease in the affinity of BDZ receptors for (3H)flunitrazepam in HD putamen. In HD

cerebellum and frontal cortex, the BDZ receptor density was increased, but there was no change in BDZ receptor affinity for (3H)flunitrazepam. Results demonstrate a significant alteration in BDZ receptors in the choreic putamen, which may contribute to the motor abnormalities of HD. 16 references.

001806 Richter, K.; Terhaag, B. Medizinische Akademie Carl Gustau Carus, Inst. Fur Klinische Pharmakologie, Fiedlerstrasse 27, DDR-8019 Dresden, German Democratic Republic **The relative bioavailability and pharmacokinetics of carbamazepine.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 16(8):377-379, 1978.

Differences in bioavailability after administration of two pure carbamazepine samples that were different in particle sizes are reported. Carbamazepine was given to each of three healthy male volunteers in a single oral dose of 400mg in gelatin capsules. The other carbamazepine sample was administered after a 3 week time interval. Plasma was collected during the following 96 hr. Quantitative determination of carbamazepine was performed by gas liquid chromatography. By comparing the areas under the various curves for each volunteer, the relative bioavailability of one of the carbamazepines in relation to the other one was approximately 70%. There were not differences in the half-life time. 6 references. (Author abstract)

001807 Robinson, Donald S.; Levine, Robert; Williams, Adrian; Statham, Nancy. Marshall University School of Medicine, Huntington, WV **Hydroxylase cofactor in human CSF -- an index of central aminergic activity.** Psychopharmacology Bulletin. 14(4):49-51, 1978.

In a paper presented at the 16th annual meeting of the American College of Neuro psychopharmacology, held in San Juan, PR, December 1977, the use of hydroxylase cofactors in human cerebrospinal fluid (CSF) as an index of central aminergic activity is discussed. CSF cofactor activity was determined in normal Ss and in patients with various neurological disorders. Most of 17 parkinsonian patients showed a significant reduction in CSF cofactor activity. The degree of clinical impairment in patients with parkinsonism was associated with the reduction in CSF pterin cofactor activity. 11 references.

001808 Saffir, Judith S. Rancho Los Amigos Hospital, Downey, CA **The theoretical implications of chlorpromazine as a sensory integrative theory.** American Journal of Occupational Therapy. 32(7):460-466, 1978.

To evaluate the influence of antipsychotic drugs used in the treatment of schizophrenia on therapy based on sensory integrative theory, the theoretical basis for these two modes of treatment are explored. Studies of chlorpromazine, a prototypical antipsychotic drug, show that its local action on the neurotransmitters of the brain may explain in theory its therapeutic efficacy. Reported sensory processing deficits in schizophrenic patients provide a theoretical basis for the use of a sensory integrative approach to therapy. 35 references. (Author abstract modified)

001809 Satterfield, James H.; Cantwell, Dennis P.; Schell, Ann; Blaschke, Thomas. Gateways Hospital, 1891 Effie St., Los Angeles, CA 90026 **Growth of hyperactive children treated with methylphenidate.** Archives of General Psychiatry. 36(2):212-217, 1979.

Weight and height gain were studied in a group of 72 hyperactive boys treated for 1 year and 48 hyperactive boys treated for 2 years with methylphenidate hydrochloride. An adverse effect was produced on growth in height and weight in the first year of treatment, but not in the second year; the first year height deficit was offset in the seocnd year by a greater than expected growth rate. No clinical predictors of growth deficits were found; growth in height deficits was not related to total dosage or summer drug holidays, but weight defictis might be related to these factors. It is suggested that the temporary growth deficits of the first year are of such minor magnitude as to have little clinical significance. 12 references. (Author abstract modified)

001810 Shader, Richard I.; Georgotas, Anastasios; Greenblatt, David J.; Harmatz, Jerold S.; Allen, Marcia Divoll. Psychopharmacology Research Laboratory, Massachusetts Mental Health Center, 74 Fenwood Rd., Boston, MA 02115 **Impaired absorption of desmethyldiazepam from clorazepate by magnesium aluminum hydroxide.** Clinical Pharmacology and Therapeutics. 24(3):308-315, 1978.

The interaction of clorazepate dipotassium (CZP) with magnesium aluminum hydroxide (Maalox), a commonly used antacid preparation, and its effect on the absorption of desmethyldiazepam (DMDZ) were investigated. Ten healthy volunteers ingested single 15mg doses of CZP with 60ml of water, or with 60ml of Maalox, on two occasions in a randomized two way crossover study. Plasma concentrations of DMDZ were determined in multiple samples drawn during 48 hours after each dose. Mean kinetic variables for DMDZ in CZP water and CZP magnesium aluminum hydroxide treatment conditions, respectively, were: peak measured concentration, 273 and 188ng/ml; time of peak concentration, 1.8and 2.8hours after dose; apparent absorption half life, 14.8and 30.7minutes; and area under the 48 hour plasma concentration curve, 6,028 and 5,433ng/ml. Self-rated sensations of feeling spacey, slowed thinking, and of generalized sedation were reported with both treatment conditions, but these subjective effects occurred earlier and were more profound when CZP was taken with water as opposed to magnesium aluminum hydroxide. It is concluded that administration of single doses of CZP with usual doses of a commonly prescribed antacid reduces the rate and extent of appearance in blood of DMDZ, the compound responsible for clinical activity, and attenuates self-rated clinical effects. 20 references. (Author abstract)

001811 Smith, Donald F.; Shimizu, Muneo. Central Laboratory, Psychiatric Hospital, DK-8240 Risskov, Denmark **The role of plasma volume, plasma renin and the sympathetic nervous system in the posture-induced decline in renal lithium clearance in man.** Neuropsychobiology (Basel). 4(6):328-332, 1978.

Excretion of lithium in urine was studied in two healthy males while recumbent and while upright, either walking or standing quietly. An oral dose of 24.3mmol of Li was taken as three lithium carbonate tablets 13 hours before clearance tests. Renal lithium clearance decreased and lithium fractional reabsorption increased while upright. Standing immersed to the neck in water prevented the fall in renal lithium clearance as well as the rise in lithium fractional reabsorption while upright. Oral doses of guanethidine (200mg) or oxprenolol (140mg) taken to prevent high levels of sympathetic nervous system activity and plasma renin, respectively, failed to prevent the fall in renal lithium clearance or the rise in lithium fractional reabsorption upon changing posture from recumbent to upright. Findings indicate that the fall in renal lithium clearance and the rise in lithium fractional reabsorption upon changing postures from recumbent to upright is related to the fall in plasma volume but not to high levels of sympathetic nervous system activity or plasma renin activity. 16 references. (Author abstract)

001812 Solomon, Kenneth. Department of Psychiatry, Medical College of Virginia, Richmond, VA 23298 **Combined use of lithium and diuretics.** Southern Medical Journal. 71(9):1098-1099, 1104, 1978.

Three cases demonstrating the effects of the combined use of lithium carbonate and a diuretic are reported. In each case, the serum lithium level rose, or the daily dose was decreased, or both. No clinical problems were noted because of careful monitoring and patient education. The renal excretion of lithium is reviewed. It is concluded that lithium and diuretics is a safe drug combination, if it is necessary to administer both drugs. 12 references. (Author abstract)

001813 Terhaag, B.; Scherber, A.; Schaps, P.; Winkler, H. Medizinische Akademie ""Carl Gustav Carus", Fiederstrasse 27, DDR-8019 Dresden, German Democratic Republic **The distribution of lithium into cerebrospinal fluid, brain tissue and bile in man.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 16(7):333-335, 1978.

The distribution of lithium in human cerebrospinal fluid, bile, and brain tissue after oral administration was investigated. Lithium carbonate was administered orally to 18 adult surgical patients. The influx of lithium into the cerebrospinal fluid was slower than that into plasma and bile, and the elimination was biexponetial. The mean plasma half-life of lithium carbonate was 21 hours. Two percent of the given dose was eliminated with the bile within 24 hours. There was no concentration difference in steady state between cerebrospinal fluid and both white and grey brain matter. It is suggested that the concentration of lithium in cerebrospinal fluid represents the brain concentration of lithium. 18 references. (Author abstract modified)

001814 Tilstone, William J.; Margot, Pierre; Johnstone, Eve C. Forensic Science Unit, School of Pharmaceutical Sciences, University of Strathclyde, Glasgow G1 1XW, Scotland **Acetylation of phenelzine.** Psychopharmacology (Berlin). 60(3):261-263, 1979.

The transfer of acetyl moities from acetyl coenzyme A was measured in preparations of rat and human liver N-acetyltransferase incubated with the monoamine oxidase inhibitor phenelzine. These preparations acetylated phenelzine from the quantitative transfer of radiolabeled acetate. This in vitro demonstration of phenelzine acetylation in rat and human liver was corroborated by the finding of a negative correlation between the excretion of phenelzine in urine and sulphadimidine acetylation in 27 patients. 11 references. (Author abstract modified)

001815 Tolosa, Eduardo S. Department of Neurology, Box 468-Mayo, University of Minnesota School of Medicine, Minneapolis, MN 55455 **Modification of tardive dyskinesia and spasmodic torticollis by apomorphine.** Archives of Neurology. 35(7):459-462, 1978.

A groups of 16 patients with involuntary movement disorders received subcutaneous injections of the dopamine (DA) agonist, apomorphine hydrochloride. Paradoxically, these injections were generally followed by a reduction of dyskinesia; this was most noticeable in patients with tardive dyskinesia and was only mild in some patients with spasmodic torticollis. Preferential stimulation by apomorphine of inhibitory DA presynaptic receptors (DA autoreceptors) is proposed as the most likely explanation for the observed antidyskinetic effects of the drug. Results suggest that direct DA agonists may be used clinically to attenuate CNS dopaminergic transmission, especially when use of antidopaminergic drugs such as the neuroleptics is contraindicated. 29 references. (Author abstract)

001816 Vallner, J. J.; Needham, T. E.; Jun, H. W.; Brown, W. J.; Stewart, J. T.; Kotzan, J. A.; Honigberg, I. L. School of Pharmacy, University of Georgia, Athens, GA 30602 **Plasma levels of clobazam after three oral dosage forms in healthy subjects.** Journal of Clinical Pharmacology. 18(7):319-324, 1978.

The blood level profiles of clobazam formulated as tablet and capsule dosage forms were quantitatively evaluated and these levels were compared to those of a solution containing an equal dose in healthy male volunteers. A significant though short dosage form delay effect was observed when the solid dosage forms are compared to the rapidly available solution of clobazam. Comparison of the solid dosage form with the solution indicates that the fraction of clobazam absorbed is 1. Pupil diameter measurements after ingestion correlated well with the plasma levels. 9 references. (Author abstract modified)

001817 van Kammen, D. P.; Levine, R.; Sternberg, D. Biological Psychiatry Branch, Intramural Research Program, NIMH, Bethesda, MD 20014 **Preliminary evaluation of hydroxylase cofactor in human spinal fluid: potentia biochemical and clinical relevance for psychiatric disorders.** Psychopharmacology Bulletin. 14(4):51-52, 1978.

In a paper presented at the session on the biochemistry and potential use of hydroxylase cofactors as an index of aminergic activity, at the 16th annual meeting of the American College of Neuropsychopharmacology, held at San Juan, PR, December 1977, the potential biochemical and clinical relevance for psychiatric disorders of the evaluation of hydroxylase cofactor in human cerebrospinal fluid (CSF) is discussed. CSF samples of four schizophrenic patients, four patients with affective disorders, and 14 normal volunteers were not significantly different. The role of hydroxylase cofactor in the etiology of psychiatric disorders is discussed. 17 references.

001818 van Kammen, Daniel P.; Docherty, John P.; Marder, Stephen R.; Siris, Samuel G.; Bunney, Jr., William E. Biological Psychiatry Branch, DCBR, IRP, NIMH, Clinical Center, NIH, Bethesda, MD 20014 **d-amphetamine raises serum prolactin in man: evaluations after chronic placebo, lithium and pimozide treatment.** Life Sciences. 23(14):1487-1492, 1978.

Serum prolactin response to intravenous d-amphetamine in man was studied by measuring the effect of the compound upon prolactin release, which is inhibited by dopamine (DA) and stimulated by serotonin. Doses of 20mg i.v. significantly raised the serum prolactin levels of 16 drug free schizophrenic patients over preinfusion levels and levels following a paired placebo lactose infusion. Amphetamine infusions were repeated after both chronic DA blockade with pimozide and after chronic lithium treatment that has been reported to attenuate amphetamine effects. These chronic pretreatments did not prevent significant increases in prolactin following d-amphetamine infusions. Pimozide raised preinfusion prolactin levels, but lithium had no effect. Further studies are needed to clarify the d-amphetamine induced rise in prolactin. 27 references. (Author abstract modified)

001819 Van Loon, Glen R. University of Toronto, Department of Medicine, Medical Sciences Building, Room 6265, Toronto, Ontario, Canada M5S 1A8 **Bromocriptine-induced inhibition of plasma dopamine, noradrenaline and adrenaline responses to LH-RF.** Nature (London). 275(5678):331-332, 1978.

The influence of bromocriptine, a dopamine receptor agonist, upon the depressant effect of luteinizing hormone releasing factor (LH-RF) on plasma catecholamines was investigated in normal male subjects. LH-RF given to male subjects 4 hours after plasma concentrations of dopamine, noradrenaline and adrenaline had returned to basal levels following bromocriptine administration failed to suppress plasma concentrations of any of the three catecholamines. Thus, bromocriptine interfered with the effect of LH-RF on plasma catecholamines at a time when its own effect on catecholamine release had apparently ended, although its effect on serum prolactin was still present. Possible

LH-RF and bromocriptine mechanisms of action through either dopamine receptors or presynaptic receptors of peripheral catecholaminergic neurones are discussed. 13 references.

001820 Wargin, William Anthony. University of Minnesota **The pharmacokinetics of propranolol in man and in the rabbit. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7813468, HC$15. MF$7.50. 239 p. 1978.

The pharmacokinetics of propranolol administered intravenously and orally to rabbits and orally to a group of hypertensive patients were studied. Propranolol obeyed multicompartmental pharmacokinetics in the rabbit following intravenous administration, and there was evidence that extrahepatic clearance occurs. No evidence for dose dependent pharmacokinetics occurred. Oral propranolol adminstrations to hypertensives proved effective in treatment of their symptoms. Patients were divided into two groups depending upon whether intrinsic clearance remained relatively constant (type l) or decreased with increasing dose (type 2). The existence of a saturable first pass effect was evident in type 2 patients. Overall findings suggest that although propranolol pharmacokinetics are nonlinear in some patients, the extent of this nonlinearity is much less a complicating factor in propranolol therapy than is wide intersubject variability. The existence of such variability implies that the measurement of propranolol blood levels may be helpful in managing the patient who appears to be refractory to this drug. (Journal abstract modified)

001821 Weiner, William J.; Kramer, Jefferey; Nausieda, Paul A.; Klawans, Harold L. Department of Neurological Sciences, Rush-Presbyterian-St. Luke's Medical Center, 1725 W. Harrison St., Chicago, IL 60612 **Paradoxical response to dopaminergic agents in parkinsonism.** Archives of Neurology. 35(7):453-455, 1978.

A patient with the classical stigmata of parkinsonism was treated on three separate occasions with levodopa, a combination of levadopa and carbidopa, and lergotrile mesylate, a direct acting dopamine receptor blocker. All three treatment regimens resulted in dose related increases in parkinsonian features. Lergotrile did not alter cerebrospinal fluid homovanillic acid concentration. It is suggested that this rare paradoxical motor response to dopaminergic agents may be associated with dysfunction of postsynaptic receptor site. 32 references. (Author abstract)

001822 Wells, B.; Silverstone, T.; Rees, Lesley. Academic Unit of Human Psychopharmacology, St. Bartholomew's Hospital, London, England **The effect of oral dextroamphetamine on prolactin secretion in man.** Neuropharmacology (Oxford). 17(12):1060-1061, 1978.

In a paper presented at the July 1978 meeting of the British Association for Psychopharmacology, held at the University of Wales Institute of Science and Technology in Cardiff, the effects of oral d-amphetamine on prolactin (PRL) secretion in six healthy male volunteers are reported. D-amphetamine caused a statistically significant, dose related fall in serum PRL levels 1 hour after drug administration; the mean fall was 40.6mU/L after 10mg d-amphetamine and 138.8mU/L after 20mg. In the second hour after drug administration, PRL levels began to rise. PRL levels returned to baseline values after 10mg d-amphetamine, but continued to be depressed for 4 hours after the 20mg dose. The fall in circulating serum PRL levels after d-amphetamine is consistent with the view that d-amphetamine potentiates central dopaminergic activity in humans. 7 references.

001823 Wurtman, Richard J. Dept. of Nutrition and Feed Science, Laboratory of Neuroendocrine Regulation, MIT, Cambridge, MA 02139 **Nutritional and precursor control of brain acetylcholine synthesis.** Psychopharmacology Bulletin. 14(4):53-55, 1978.

In a paper presented at the session on the uses of acetylcholine precursors in the diagnosis and treatment of neurological and psychiatric disease, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, nutritional and precursor control of brain acetylcholine synthesis are described. Research studies are described which indicate that the synthesis of acetylcholine can be influenced by the levels of its precursor, choline in the diet and in the bloodstream, and that the ability of oral choline doses to enhance acetylcholine synthesis can be used to treat at least one neuropsychiatric disorder, tardive dyskinesia. The possibility that lecithin or lecithin analogues can be used to treat psychiatric disorders involving inadequate release of acetylcholine is noted. 15 references.

14 MECHANISM OF ACTION: BEHAVIORAL

001824 Arkin, Arthur M. Department of Psychology, City of University of New York, New York, NY 10021 **Night-terrors as anomalous REM sleep component manifestation in slow-wave sleep.** Waking and Sleeping (Eisingen-Wurzburg). 2(3):143-147, 1978.

Stage 4 night terror is discussed as an anomalous manifestation of REM sleep components during slow wave sleep. It is suggested that during any state of consciousness, the prevailing state may be perturbed by the sudden appearance of behavioral, subjective, and electrographic components of some other state of consciousness. This concept has been used to explain phenomena observable in conditions such as narcolepsy, in which similar anomalous manifestions of REM sleep components occur during wakefulness. Members of those drug classes which tend to reduce REM sleep also tend to ameliorate night terrors, while those drugs which have no effect on REM parameters do not benefit night terror patients. Inasmuch as REM suppressants appear to benefit other parasomniac disorders such as somnambulism and nocturnal enuresis, perhaps these other disorders of arousal may also be related, as well as night terrors, to anomalous REM sleep component manifestations along with REM narcolepsy/cataplexy syndromes. 22 references. (Author abstract modified)

001825 Barkley, Russell A.; Cunningham, Charles E. Department of Neurology, Medical College of Wisconsin, 1700 W. Wisconsin Ave., Milwaukee, WI 53233 **The effects of methylphenidate on the mother-child interactions of hyperactive children.** Archives of General Psychiatry. 36(2):201-208, 1979.

An initial attempt to examine the effects of methylphenidate on the contingent, reciprocal interactions of hyperactive boys and their mothers is reported. Twenty hyperactive boys were observed while interacting with their mothers during a free play and task period on each of three occasions (no drug, drug, placebo). A triple-blind drug/placebo crossover design was used to study the effects of methylphenidate on these interactions. A complex objective coding system was used to score the children's responses to various maternal behaviors as well as the mothers' responses to a variety of children's behaviors. Results indicated that children were more compliant with maternal commands during drug treatment, but initiated fewer social interactions and tended to show greater nonresponding. It is suggested that methylphenidate may improve the compliance of hyperactive children but may decrease their sociability. 34 references. (Author abstract modified)

001826 Bindelglas, Paul M.; Dee, George. Camelback Professional Building, 5051 N. 34th St., Phoenix, AZ 85018 **Enuresis**

treatment with imipramine hydrochloride: a 10-year follow-up study. American Journal of Psychiatry. 135(12):1549-1552, 1978.

A 10 year followup study of 29 young adult patients who, as children, had been treated for enuresis with imipramine hydrochloride is described. Subjects were contacted by telephone to determine the presence or absence of the following potential long-term effects of imipramine hydrochloride: psychological decompensation; inhibition of learning; predisposition to drug abuse; negative effects on health, growth, weight, and development; and continued urinary symptoms. None of these negative effects was present. In general, the subjects were active, well motivated, and sociable and showed no significant psychiatric symptoms. One patient still wetted, but only occasionally. 20 references. (Author abstract modified)

001827 Brown, Edward; Brown, Gregory M.; Kofman, Oscar; Quarrington, Bruce. 90 Warren Road, Suite 109, Toronto, Ontario, Canada M4V 2S2 **Sexual function and affect in parkinsonian men treated with L-dopa.** American Journal of Psychiatry. 135(12):1552-1555, 1978.

The effect of L-dopa treatment of men with Parkinson's disease was assessed using psychiatric interviews, sexual and affect rating scales, hormonal studies, and neurological assessment. Patients demonstrated variable affect changes. Approximately one half of the patients reported an increased sexual interest that was not related to imporvement in locomotor function. Hormonal factors appeared to be involved. The findings suggest that male parkinsonian patients who possess an intact hypothalamic pituitary gonadal axis experience increased sexual function related to L-dopa treatment. 13 references. (Author abstract)

001828 Davis, Kenneth L.; Yamamura, Henry I. Stanford University School of Medicine, Palo Alto, CA 94304 **Cholinergic underactivity in human memory disorders.** Life Sciences (Oxford). 23(17/18):1729-1734, 1978.

Evidence of cholinergic underactivity in human memory disorders is reviewed. It is suggested that the age related decrease in central cholinergic neurons that is particularly severe in patients with senile dementia may underlie the cognitive impairment of the aged. This possibility is supported by pharmacological studies demonstrating a decrement in memory processes following administration of anticholinergic drugs and an improvement in some aspects of memory function following the administration of cholinomimetics. The ability of drugs that increase cholinergic activity to improve cognitive processes in the elderly and patients with senile dementia may depend on the degree of cholinergic receptor degeneration in these patients. 31 references. (Author abstract modified)

001829 Goldstein, S. E.; Birnbom, F.; Lancee, W. J.; Darke, A. C. Queensway-Carleton Hospital, 3045 Baseline Road, Ottawa, Ontario, Canada K2H 8P4 **Comparison of oxazepam, flurazepam and chloral hydrate as hypnotic sedatives in geriatric patients.** Journal of the American Geriatrics Society. 26(8):366-371, 1978.

Oxazepam, flurazepam, and chloral hydrate were compared as hypnotic sedatives in 17 geriatric patients over a 4 week period. Each drug was given alone for 6 nights, with a 2 night placebo interval following each phase. Each patient completed an additional placebo phase (up to 6 nights) before each drug phase. The number of awakenings per night and the sleep latency were determined from observation and self-reports. Only for oxazepam was the number of patient reported awakenings per night significantly less than for placebo, although with both oxazepam and flurazepam the awakenings were significantly less than with chloral hydrate. According to patient reports, sleep latency was significantly lower with flurazepam than with placebo. Only for oxazepam were ratings of sleep quality significantly higher than for placebo. Morning drowsiness was the most common side-effect, and was reported equally for active drugs and for placebo. It is concluded that oxazepam is safe and efficacious for the short-term management of insomnia in the elderly. 3 references. (Author abstract modified)

001830 Gottschalk, Louis A.; Cohn, Jay B. Cohn: Dept. of Psychiatry and Human Behavior, College of Medicine, University of California, Irvine, CA 92664 **The relationship of diazepam and ketazolam blood levels to anxiety and hostility in chronic alcoholics.** Psychopharmacology Bulletin. 14(3):39-43, 1978.

In a summary of a paper delivered at the 16th Annual Meeting of the American College of Neuropsychopharmacology, held in San Juan, December 14-16, 1977, the relationship of diazepam and ketazolam blood levels to anxiety and hostility in chronic alcoholics was discussed. Ten hospitalized chronic alcoholics were initially administered varying dosages of diazepam orally, which was followed by the administration of ketazolam (50-300mg/day) for 21 days. On the days that blood was drawn and examined for plasma drug levels, sample speeches by subjects were recorded and blindly scored for anxiety and hostility. A significant negative correlation between diazepam and N-desmethyldiazepam plasma levels with total hostility outward and overt hostility outward scores, derived from speech samples, was found on short-term daily oral drug administration. No significant correlation between drug blood level and clinical response was found with long-term benzodiazepine administration. 15 references.

001831 Griffis, Larry C.; Bright, Thomas P.; Cerimele, Benito, J.; Forney, Robert B. Lovelace Inhalation Toxicology Research Institute, P.O. Box 5890, Albuquerque, NM 87115 **Combined effects of fenmetozole and ethanol.** Clinical Pharmacology and Therapeutics. 24(3):350-353, 1978.

The effect of fenmetozole alone and in combination with ethanol on human performance and subjective symptoms, using a Latin square experimental design, was investigated. Eight male subjects took none or 200mg fenmetozole 1 hour before drinking a beverage containing none or 50ml/70kg ethanol. Tests designed to measure mental and motor performance were administered 2 hours after fenmetozole ingestion. Fenmetozole alone impaired standing steadiness but improved mental performance in one test. Fenmetozole did not antagonize the decrement in performance induced by this amount of ethanol. Results show that, in combination, the subjective symptoms caused by fenmetozole were additive with those of ethanol. 12 references. (Author abstract modified)

001832 Grundstrom, Ronny; Holmberg, Gunnar; Hansen, Tage. Psychiatric Unit, Danderyd Hospital, S-18203 Danderyd, Sweden **Degree of sedation obtained with various doses of diazepam and nitrazepam.** Acta Pharmacologica et Toxicologica (Kobenhavn). 43(1):13-18, 1978.

Using critical flicker fusion (CFF) determination and estimation of drowsiness in eight healthy volunteers, the sedative/hypnotic effects of diazepam and nitrazepam were studied. The most reliable results were obtained with the CFF method, and significant dose/effect relations could be demonstrated. The CFF deviation after diazepam initially related well to the blood serum concentration, but after 4 to 6 hours, the CFF depression vanished rapidly, while the drug concentration remained high. After nitrazepam, the signs of drowsiness occurred similarly, while the drug concentration in serum showed a slower rise. The effects began to disappear before the nitrazepam concentration had reached a peak. A rapid tachyphylaxis at the receptor sites seems to be responsible for this incongruity. Nitrazepam

exerted significantly stronger sedative effects than diazepam. 8 references. (Author abstract modified)

001833 Herrmann, Werner M.; McDonald, Richard J.; Bozak, M. Mahir. Dept. of Clinical Neuropsychopharmacology, Schering AG, Berlin/Bergkamen, Germany **The effects of hormones on human behaviour as measured by psychological tests.** Progress in Neuro-Psychopharmacology (Oxford). 2(4):469-478, 1978.

The psychotropic effects of three hormones (mesterolone, fluocortolone, and estradiol valerate) and two control drugs amitriptyline and d-amphetamine) on human behavior were investigated using a battery of psychological tests. Test measures included: critical flicker fusion frequency, reaction time, Pauli performance test, tapping, and peg board performance. Results indicate that the test battery employed is sensitive in detecting the sedative and stimulatory properties of the control drugs. The effects of the three hormones in comparison to the control drugs indicate that they influence human performance. 14 references. (Author abstract modified)

001834 Hink, Robert F.; Fenton, Wayne H., Jr.; Pfefferbaum, Adolph; Tinklenberg, Jared R.; Kopell, Bert S. Laboratory of Clinical Psychopharmacology and Psychophysiology, V.A. Hospital, 3801 Miranda Ave., Palo Alto, CA 94304 **The distribution of attention across auditory input channels: an assessment using the human evoked potential.** Psychophysiology. 15(5):466-473, 1978.

In order to determine the extent to which distraction disrupts performance when attention is divided, the distribution of attention across five auditory input channels was assessed using the N1 component of the human auditory evoked potential. In addition, the possibilty that methylphenidate (Ritalin) affects the distribution of attention across input channels was tested. Sixteen subjects performed a tone discrimination task under conditions of focused attention and divided attention, both with and without the presence of stimuli interposed between the points to be attended. The subjects performed in two sessions during which they received either methylphenidate (10mg) or a placebo in a double-blind design. The results how that the interposed stimuli were receiving some attention as reflected in the N1 wave. The data are interpreted as showing that: 1) distraction plays a major role in producing performance deficits observed with divided attention, and 2) methylphenidate does not appreciably affect the distribution of attention across input channels. 25 references. (Author abstract)

001835 Hynek, K.; Zvolsky, P.; Drabkova, H. Psychiatric Clinic, Prague 2, Czechoslovakia **Chlorpromazine on the EEG in twins.** Activitas Nervosa Superior (Praha). 20(1):48-49, 1978.

In a paper read at the 19th Annual Psychopharmacological Meeting, held in Jesenik, Czechoslovakia during January 1977, the effects of chlorpromazine on the EEG in twins are described. EEG recordings were made of 28 monozygotic and 30 dizygotic twins following oral administration of placebo or 50mg chlorpromazine. Heredity indexes, calculated on the basis of twin intrapair correlations during rest and various activities for different EEG frequencies, are reported. Chlorpromazine produced a significant rise in theta and beta activity, and decreased intrapair correlations except in the beta band.

001836 Janowsky, David S.; Leichner, Pierre; Parker, Donal; Judd, Lewis L.; Huey, Leighton; Clopton, Paul. Department of Psychiatry, University Hospital, 225 W. Dickinson St., San Diego, CA 92103 **The effect of methylphenidate on serum growth hormone: influence of antipsychotic drugs and diagnosis.** Archives of General Psychiatry. 35(11):1384-1389, 1978.

Using neuroendocrine strategies, the effects of methylphenidate on central catecholaminergic activity was studied. Twelve female and 32 male psychiatric inpatients were used with sex, age, primary diagnosis, and daily dosage of their respective medications outlined. Patients ranged in age from 18 to 61 years. Patients received a single dose of methylphenidate, 0.5mg/kg given over 30 seconds through a slowly running intravenous unit. For 36 of the 44 patients, blood pressure and pulse were monitored and talkativeness and anxiety rated along with blood samples which were withdrawn 30 min after and 60 min after the infusion. A rise in serum growth hormone level following methylphenidate infusion was noted in 88% of patients. Also, growth hormone response to methylphenidate was found to be significantly greater than the response to saline. Talkativeness ratings increased significantly after methylphenidate infusion, usually peaking within 30 min thus paralleling increase in growth hormone. Systolic and diastolic blood pressure and pulse rate increased significantly following methylphenidate indusion; these increases also parallel increases in talkativeness and growth hormone levels. It was found that: 1) intravenous methylphenidate produces a significant rise in serum growth hormone levels in psychiatric patients; 2) this rise is muted in patients receiving antipsychotic medication; and 3) schizophrenic and drug dependent Ss have a smaller rise in growth hormone level following methylphenidate infusion than do alcoholics, neurotic depressives, and manic-depressives who are depressed. 26 references.

001837 Kerry, R. J.; Orme, J. E. Northern General Hospital, Sheffield S5 7AU, England **Lithium, manic-depressive illness, and psychological test performance.** British Medical Journal (London). No. 6158:230, 1979.

The psychological test performance of 20 manic-depressive patients treated with lithium was investigated. The subjects were chosen on the basis of their good responses to lithium therapy. They were administered the Middlesex Hospital Questionnaire, a measure of anxiety, obsessional features, depression, and hysteria, and a questionnaire measuring depression in terms of guilt, mood, impairment, and retardation. On both questionnaires, the symptom-free subjects obtained scores closer to those of normals than to those of depressives or psychiatric patients. However, on the obsessional scale, scores were closer to those of psychiatric patients. 5 references.

001838 Landowski, Jerzy; Nowicki, Zbigniew. Klinika Chorob Psychicznych AM, 80-221 Godansk, Debinki 7, Poland /**Tests of the activity of Reladorm.**/ Wlasne doswiadczenia kliniczne nad dzialaniem Reladormu. Psychiatria Polska (Gdansk). 12(4):469-477, 1978.

The soporofic, anticonvulsant and tranquilizing properties of reladorm-POLFA were studied. The soporofic action of the drug was assessed by using the Puzynski sleep observation scale. Reladorm was administered to 20 patients, most of whom suffered from sleep disorders accompanying organic lesion to the CNS. The drug has proved an effective hypnotic in the treatment of insomnia of various etiology, since it induces fast, deep, long, and natural sleep. The drug is somewhat more effective when administered in the form of injections than orally, and this is particularly evident in the endphase of sleep. Reladorm was found to be effective in generalized tonic/clonic attacks and in mitigating symptoms of epileptic character disorders. The tranquilizing action of reladorm was tested in 36 patients. One single injection in cases of neurosis either relieved or mitigated acute states of anxiety and restlessness and was found more effective than promazine. Reladorm in vials may be indicated for acute anxiety states, restlessness, or psychomotor agitation requiring immediate intervention. When administered in doses producing

no side-effect, reladorm is superior to promazine and other neuroleptics. 11 references. (Journal abstract modified)

001839 Loney, Jan; Prinz, Robert J.; Mishalow, Joel; Joad, Jesse. Dept. of Psychiatry, University of Iowa, 500 Newton Road, Iowa City, IA 52242 **Hyperkinetic/aggressive boys in treatment: predictors of clinical response to methylphenidate.** American Jouranl of Psychiatry. 135(12):1487-1491, 1978.

Data on 84 nonretarded boys aged 6 to 12 with the hyperkinetic/minimal brain dysfunction syndrome were drawn from a comprehensive, longitudinal investigation in order to identify factors that contribute significantly to variation in clinically rated improvement during treatment with methylphenidate. Results indicate that 25% of the variation in children's response to methylphenidate is jointly predictable from age at referral, degree of perinatal complications, and score on the hyperactivity factor. Stepwise multiple regression analysis in drug response prediction studies is discussed, and the effects of differing definitions of improvement on drug response prediction studies are described. 25 references. (Author abstract modified)

001840 Mattila, M. J.; Palva, E.; Seppala, T.; Ostrovskaya, R. U. Department of Pharmacology, University of Helsinki, Siltavuorenpenger 10, Helsinki 17, Finland **Actions and interactions with alcohol of drugs on psychomotor skills: comparison of diazepam and gamma-hydroxybutyric acid.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 234(2):236-246, 1978.

The effects of oral gamma-hydroxybutyric acid (GOBA) and psychomotor skills related to driving were compared with those of diazepam (D), alcohol, and lactose placebo in double-blind crossover trails in healthy volunteers. Neither GOBA (1.0g) nor D (10mg) modified attention. D impaired reactive skills, but coordinative skills were not significantly influenced by either drug. GOBA and D both impaired leg proprioception. In a second trial, GOBA (1.0g) slightly increased reaction mistakes, but GOBA (2.0g) the next day did not. Neither dose of GOBA affected coordinative skills, critical flicker fusion frequency, or proprioception. Alcohol alone (0.41mg/ml) improved rather than impaired skills. GOBA (1.0g) in combination with alcohol (0.36mg/ml) impaired reactive skills more than GOBA (2.0g) alone did, but no potentiation was seen. D impaired reactive and coordinative skills, as well as flicker fusion. When D was given on 2 consecutive days, some tachyphylaxis to the D response was seen on coordinative skills but not on reactive skills or flicker fusions. It is concluded that the recommended anxiolytic dose of GOBA neither deteriorates driving skills nor importantly increases the effects of low doses of alcohol. 26 references. (Author abstract modified)

001841 Mohs, Richard C.; Tinklenberg, Jared R.; Roth, Walton T.; Kopell, Bert S. Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, CA 94305 **Methamphetamine and diphenhydramine effects on the rate of cognitive processing.** Psychopharmacology (Berlin). 59(1):13-19, 1978.

Before and after oral doses of methamphetamine (10mg), diphenhydramine hydrochloride (100mg), and placebo, 24 male subjects performed three cognitive tasks in which performance depended primarily on the rate of cognitive processing. Compared with placebo and diphenhydramine, methamphetamine increased the rate at which a visual display was scanned for a target stimulus. Methamphetamine did not affect a time production task or a divided attention task that required the subject to perform two cognitive tasks in a limited amount of time. Compared with placebo and methamphetamine, diphenhydramine caused subjects to perceive geophysical time as passing more slowing; the drug had no effect on the visual search or divided attention tasks. Results indicate that methamphetamine can increase cognitive processing speed on tasks involving familiar cognitive operations but not in tasks involving more complicated decision processes. Diphenhydramine is more likely to alter time perception than performance on tasks requiring short periods of rapid cognitive processing. 20 references. (Author abstract modified)

001842 Nair, N. P. Vasavan; Yassa, Ramses; Ruiz-Navarro, Joaquin; Schwartz, George. Douglas Hospital Center, 6875 LaSalle Boulevard, Montreal, Quebec H4H 1R3, Canada **Baclofen in the treatment of tardive dyskinesia.** American Journal of Psychiatry. 135(12):1562-1563, 1978.

The efficacy of baclofen (Lioresal, 4-amino-3-(4-chlorophenyl-butryic acid), a GABA derivative that crosses the blood brain barrier, in the treatment of tradive dyskinesia was assessed in a 3 week, placebo controlled, crossover clinical trial. Neuroleptic medications were withdrawn from 10 chronic schizophrenic patients ranging in age from 40 to 64 years who had been hospitalized for at least 20 years and had moderate to severe neuroleptic induced tardive dyskinesia before receiving baclofen or placebo. Data from the Abnormal Involuntary Movement Scale, the Clinical Global Impression Scale, and the Brief Psychiatric Rating Scale indicate that baclofen, when administered alone, is ineffective in the treatment of neuroleptic induced tradive dyskinesia in chronic schizophrenics. 9 references.

001843 Polizos, Polizoes; Engelhardt, David M. Dept. of Psychiatry, Downstate Medical Center, Brooklyn, NY **Dyskinetic phenomena in children treated with psychotropic medications.** Psychopharmacology Bulletin. 14(4):65-68, 1978.

In a paper presented at the session on new approaches in childhood psychopharmacology, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, results of a survey of dyskinetic phenomena in children treated with psychotropic medications are discussed. Results indicate that tardive dyskinesia is a rare phenomenon in children, but a postwithdrawal dyskinetic syndrome, which has been referred to as WES, is quite frequent after discontinuation of neuroleptics. In general, tardive dyskinesia and dyskinetic phenomena in children have a good prognosis, and do not appear to be a serious complication of neuroleptic treatment. 6 references.

001844 Rapoport, Judith L.; Buchsbaum, Monte S.; Zahn, Theodore P.; Weingartner, Herbert; Ludlow, Christy; Mikkelsen, Edwin J. Biological Psychiatry Branch, NIMH, Bethesda, MD 20014 **Dextroamphetamine: cognitive and behavioral effects in normal prepubertal boys.** Science. 199(4328):560-563, 1978.

The behavioral, cognitive, and electrophysiological effects of a single dose of dextroamphetamine (0.5per of bodyweight mg/kg/) or placebo were examined in 14 normal prepubertal boys (mean age, 10 years 11 months) in a double-blind study. When amphetamine was given, the group showed a marked decrease in motor activity and reaction time and improved performance on cognitive tests. The similarity of the responce observed in normal children to that reported in children with hyperactivity or minimal brain dysfunction casts doubt on pathophysiological models of minimal brain dysfunction which assume that children with this syndrome have a clinically specific or paradoxical response to stimulants. 20 references. (Author abstract)

001845 Rhodes, James B.; Abrams, James H.; Manning, Robert T. Department of Medicine, University of Kansas Medical Center, 39th and Rainbow Blvd., Kansas City, KS 66103 **Controlled clinical trial of sedative-anticholinergic drugs in patients**

with the irritable bowel syndrome. Journal of Clinical Pharmacology. 18(7):340-345, 1978.

A study to compare the subjective response of irritable bowel syndrome patients to five sedative - anticholinergic drug combinations and a placebo was conducted. A total of 16 patients with long standing irritable bowel syndrome were investigated using a controlled, double-blind crossover method. The patients preferred 30mg phenobarbital plus 8mg belladonna to placebo. Five of ten patients were helped with placebo, while 10 of 15 were helped with drugs. The 10 prominent symptoms method revealed that subjective symptoms such as nervousness, sleep difficulties, and tiredness were experienced as greater problems than diarrhea. The factor analysis method documented a strong placebo response. Simpler evaluation methods such as drug preference and a five choice method appear more likely to show a positive drug effect, while the inclusion of a larger number of variables appears to emphasize the placebo portion of the response. These observations may help explain some of the apparent discrepancies between the conclusions of some controlled clinical trials and subsequent clinical experience. 16 references. (Author abstract modified)

001846 Schooler, Nina R.; Collins, Patrick J.; Sakalis, George. Psychopharmacology Research Branch, NIMH, Rockville, MD **Statistical strategies for prediction of clinical response: performance tests as predictors of reduction in psychopathology.** Psychopharmacology Bulletin. 14(4):86-88, 1978.

In a paper presented at the session on biological and behavioral prediction of psychopharmacological treatment response, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the use of performance tests as predictors of clinical response in psychopharmacotherapy is explored. The utility of measures of attention and cognitive functioning administered immediately prior to the start of chlorpromazine therapy as predictors of clinical outcome as indexed by factor scores derived from the Inpatient Multidimensional Psychiatric Scale (IMPS) was assessed with 88 newly hospitalized schizophrenic patients. Results indicate that the performance tests do not predict clinical response to therapy. 4 references.

001847 Sitaram, Natraj; Moore, Angela M.; Gillin, J. Christian. Unit on Sleep Studies, BPB, NIMH, Bldg. 10, Bethesda, MD 20014 **The effect of physostigmine on normal human sleep and dreaming.** Archives of General Psychiatry. 35(10):1239-1243, 1978.

To determine whether physostigmine, an anticholinesterase that increases the action of brain acetylcholine and induces rapid eye movement (REM) sleep in normal humans, is associated with dreaming, 17 normal volunteers were pretreated with methscopolamine and received one intravenous infusion per night of either placebo or physostigmine either 10 or 35 minutes after sleep onset. Subjects were awakened at specific times after infusion and interviewed regarding any sleep mentation prior to awakening. Results indicated that dreaming occurred during physostigmine induced REM periods, but that physostigmine did not alter mentation during non-REM sleep. These dreams were similar to spontaneous REM sleep dreams in content, vividness, unusualness, and emotionality. 23 references. (Author abstract)

001848 Solis, H.; Jurado, J. L.; Martinez-Campos, A.; Maisterrena, J.; Fernandez-Guardiola, A.; Valverde-R, C. Unidad de Investigaciones Cerebrales, Instituto Nacional de Neurologia, Mexico 22, D.F., Mexico **Thyroliberin (TRH), D-amphetamine, and triiodothyroinine (T3) effects on human sleep.** Waking and Sleeping (Eisingen-Wurzburg). 2(1):43-45, 1978.

The action of thyrotropin releasing hormone (TRH) on nocturnal human sleep was evaluated by all night polygraphic recordings in three normal subjects, and the sleep effects, triiodothyroinine (T3), and amphetamine were measured. It was found that both TRH and D-amphetamine exert similar qualitative effects, decreased total sleep time, and increased waking. Slow wave sleep, particularly stage 4, was decreased by both drugs. In contrast, T3 administration decreased waking stage and increased total sleep time. Results appear to substantiate the suggestion that TRH and thyroid hormones may play a role in the regulation of the sleep/waking cycle. 18 references. (Author abstract modified)

001849 Tyrer, Peter. University Department of Psychiatry, Southampton General Hospital, Southampton, England **Drug treatment of psychiatric patients in general practice.** British Medical Journal (London). No. 6149:1433-1434, 1978.

In response to criticisms of a previous article (Tyrer, 1978) drug treatment of psychiatric patients in general practice is further discussed in a letter to the editor. Specific critiques relating to sample bias and dosage levels for tricyclics are presented. It is suggested that the difficulties of general practice cannot justify incorrect prescribing of psychotropic medications. It had been hoped that the original article would result in physicians' prescribing benzodiazepines singly, for short periods at a time, in flexible rather than fixed dose schedules, and at adequate dosages to ensure antidepressant activities rather than only sedation.

001850 Tyrer, Peter. Faculty of Medicine, University of Southampton, Southampton General Hospital, Southampton SO94XY, England **Drug treatment of psychiatric patients in general practice.** British Medical Journal (London). No. 6143(Oct. 7):1008-1010, 1978.

The psychotropic drug prescribing practices of 80 general practitioners were assessed by analyzing the drug regimens of 287 psychiatric patients referred to a psychiatric outpatient clinic over a 4 year period. Of these patients, 220 were taking one or more of 56 different psychotropic drugs at referral. Diazepam was the most frequently prescribed drug. Benzodiazepines and barbiturates had been taken for a significantly longer time than other drugs, and of a total of 342 drugs, 61 had been prescribed regularly for over a year. Half of the drugs were considered to be incorrectly prescribed on pharmacological grounds, the main errors being: unnecessarily prolonged regular treatment, incorrect dosage (particularly common with antidepressants), and polypharmacy with drugs of similar pharmacological actions. It is suggested that a basic grounding in the pharmacology of psychotropic drugs might help general practitioners to avoid prescribing errors of this kind. 22 references. (Author abstract modified)

001851 Whitehead, William E.; Robinson, Ann; Blackwell, Barry; Stutz, Robert M. Department of Psychiatry, 231 Bethesda Ave., Cincinnati, OH 45267 **Flooding treatment of phobias: does chronic diazepam increase effectiveness?** Journal of Behavior Therapy and Experimental Psychiatry. 9(3):219-225, 1978.

Flooding was combined with either chronic diazepam (15mg/day) or placebo in the treatment of small animal phobias. Diazepam had no effect on the length of time required for successful treatment. This result is consistent with animal studies showing that tranquilizers do not enhance the effects of response prevention as a method of eliminating conditioned fears, but this result contrasts with human studies showing that flooding effects are enhanced, if treatment sessions follow single doses of tranquilizers. It is suggested that differences in experimental outcome are

attributable to whether flooding sessions overlap the waxing and waning of the drugged state. 15 references. (Author abstract)

15 TOXICOLOGY AND SIDE EFFECTS

001852 Adeoshun, I. O.; Healy, T. E. J.; Patrick, J. M. Department of Physiology and Pharmacology, Medical School, Queen's Medical Centre, Nottingham NG7 2UH, England **Ventilatory patterns in surgical patients premedicated with lorazepam or diazepam.** British Journal of Pharmacology (London). 64(3):458P-459P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, ventilatory patterns in surgical patients premedicated with lorazepam or diazepam are described. Continuous recordings were made before and after intravenous lorazepam (2mg) or diazepam (10mg). Periodic breathing was recorded in 9 of 10 patients following lorazepam, but no periodic breathing was observed in the 10 patients given diazepam, except in one patient in whom partial airway obstruction occurred. These results indicate that the incidence of periodic breathing is likely to be higher with lorazepam than diazepam when given intravenously for premedication of recumbent patients awaiting general surgery. 5 references. (Author abstract modified)

001853 Ban, Thomas A. 1501 Murfreesboro Road, Nashville, TN 37217 **Adverse effects in maintenance therapy.** International Pharmacopsychiatry (Basel). 13(4):217-229, 1978.

At the VI World Congress on Psychiatry held in Honolulu, August to September 1977, a paper was presented in which adverse effects in maintenance therapy with emphasis on tardive dyskinesia. and lithium salts are reviewed, with emphasis on tardive dyskinesia. The possible teratogenicity of neuroleptics and lithium salts is discussed. Chromosomal abnormalities seen in patients treated with lithium salts are described. 62 references. (Author abstract modified)

001854 Baniewicz, Kazimierz. 87-1000 Torun, ul. Chopina 226, Poland **/A case of amitriptyline addiction./** Przypadek farmakomanii amitryptylinowej. Psychiatria Polska (Gdansk). 12(4):527-528, 1978.

Addiction to amitriptyline is reported in the case of a young woman treated with the drug for 4 years for chronic depressive symptomatology. After 3 years of treatment with amitriptyline in daily dosages of 75 to 175mg, the patient received a successful course of imipramine but wanted to be switched back to amitriptyline. All attempts to take her off amitriptyline were futile, and she even increased the daily dosage from 150 to 275mg and, sporadically, to 400 mg. Psychological and probably also physical dependence on the drug were striking in this case.

001855 Baruch, Lidia. I Klinika Psychiatrii Slaskiej AM, ul. Grunwaldzka 48, 42-700 Lublin, Poland **/A dementive syndrome following an attempt at suicide with insulin./** Zespol otepienny po probie samobojczej insulina. Psychiatria Polska (Gdansk). 12(4):529-531, 1978.

A case of a dementive syndrome occurring in a 42-year-old psychopathic, alcoholic patient after his third suicide attempt with insulin is described. The day after his wife died of diabetes he made his first suicide attempt by injecting himself with insulin. Two more suicide attempts followed over the next 7 or 8 years of unhappy second and third marriages. The dementive syndrome was the result of several days' deep hypoglycemic coma which produced irreversible CNS changes. 5 references.

001856 Bateman, D. N.; Coxon, A.; Legg, N. J.; Reid, J. L. Wolfson Unit of Clinical Pharmacology, Claremont Place, University, Newcastle upon Tyne NE1, England Treatment of the **on-off syndrome in Parkinsonism with low dose bromocriptine in combination with levodopa.** Journal of Neurology, Neurosurgery, and Psychiatry (London). 41(12):1109-1113, 1978.

The addition of bromocriptine, given in divided doses up to 30mg per day, to conventional antiParkinsonism therapy was studied in a double-blind placebo controlled clinical trial in 11 patients with Parkinsonism with the on/off syndrome. Four patients withdrew because of side-effects. Of the seven remaining patients, three had clinical benefit from bromocriptine, with reduction in severity and frequency of fluctuations of performance on levodopa containing preparations. There was, however, no statistically significant benefit when the group as a whole was assessed in terms of severity or frequency of fluctuations measured by three different methods. The mean frequency of major fluctuations was 2.9/day on placebo and 1/8/day on bromocriptine. There appears to be a limited role for bromocriptine as traditional therapy in the management of some patients with on/off syndrome. 15 references. (Author abstract modified)

001857 Baylis, P. H.; Heath, D. A. Department of Medicine, Veterans Administration Hospitals, 1481 West Tenth St., Indianapolis, IN 46202 **Water disturbances in patients treated with oral lithium carbonate.** Annals of Internal Medicine. 88(5):607-609, 1978.

Forty eight patients treated with oral lithium carbonate and 20 control subjects were studied to define the causes of lithium induced water disturbances. Measurement of plasma immunoreactive arginine vasopressin, plasma osmolality, and urine osmolality after a period of dehydration separated nephrogenic diabetes insipidus, cranial diabets insipidus, and primary polydipsia, the 3 postulated mechanisms of lithium induced polyuria. Seventeen patients had a urinary concentrating defect despite serum lithium concentrations in the therapeutic range. Ten of these patients had nephrogenic diabetes insipidus, one had results suggestive of cranial diabetes insipidus, but none had evidence of primary polydipsia. Symptoms of thirst and polyuria were poor indicators of the degree of hypoosmolar urine. No patient had electrolyte abnormalities, and none had sufficiently severe polyuria to stop lithium treatment. 17 references. (Author abstract)

001858 Borison, Richard L. Illinois State Psychiatric Institute, 1601 Taylor St., Chicago, IL 60612 **Amantadine-induced psychosis in a geriatric patient with renal disease.** American Journal of Psychiatry. 136(1):111-112, 1979.

Amantadine induced psychosis in a geriatric patient with renal disease is reported. Although amantadine is a weak dopaminergic agent that rarely produces changes in mental status, it has a much prolonged half-life in geriatric patients, may reach toxic levels in the presence of chronic renal disease, and may result in hallucinatory activity. Since the use of weak acting dopaminergic agents is now advocated in treating early Parkinson's disease and amantadine has also been advocated for treating neuroleptic induced extrapyramidal side effects, this drug should be used only after careful clinical evaluation of renal function, especially in elderly patients. 9 references.

001859 Brenner, Ira. Department of Psychiatry, University of Virginia Medical School, Charlottesville, VA 22901 **Bromism: alive in well.** American Journal of Psychiatry. 135(7):857-858, 1978.

A case is reported of bromide intoxication from contaminated well water. The patient presented with an agitated depression and displayed subtle evidence of bromide toxicity, including tremor and memory disturbance. Use of the well for 2 months before an auto accident may have contributed to the accident. The bromism dissipated within a week without treatment, al-

though the half-life of bromide has been reported to be about 12 days. It is speculated that a constitutional or acquired biochemical defect that would allow subtoxic levels of the ion to interfere with neurotransmission of biogenic amines could exaggerate or precipitate mood changes in vulnerable people. 9 references.

001860 Burrows, G. D.; Davies, B.; Kincaid-Smith, Priscilla. Departments of Psychiatry and Nephrology, Royal Melbourne Hospital, Victoria 3050, Australia **Unique tubular lesion after lithium.** Lancet. (1)8077:1310, 1978.

Lesions found in kidney biopsy specimens from five patients who had been receiving lithium therapy for from 4 months to 9 years are described. All five biopsy specimens, including those from patients who had been on lithium for only 4 and 5 months, showed a unique tubular lesion mainly in distal convoluted tubules and collecting ducts. Three patients who had taken lithium for 6, 7, and 9 years, respectively, showed more advanced changes, including sclerosis of 10 to 20% of glomeruli, tubular atrophy and interstitial fibrosis. Because the early biopsy specimens showed only tubular changes and the later ones showed focal nephron atrophy, it seems likely that the tubular lesion, perhaps through obstruction of the lumen by casts composed of desquamated cells, may lead to the focal nephron atrophy seen after prolonged treatment. It is suggested that criteria for using lithium for long term treatment should become more strict. 4 references.

001861 Casey, Daniel E. VA Hospital, Sam Jackson Park, Portland, OR 97207 **Managing tardive dyskinesia.** Journal of Clinical Psychiatry. 39(10):748-753, 1978.

Guidelines and drug therapies which may minimize the potentially harmful effects of neuroleptic drugs are discussed. Tardive dyskinesia, a delayed side-effect of neuroleptic drugs, requires early recognition and a systematic treatment plan. An outline is presented which offers guidelines for management strategies and drug treatments, along with a summary of recent developments. The guidelines will not work for all situations. As the risks of neuroleptic treatment are minimized, and as the benefits are maximized, tardive dyskinesia will become a less frequent and a less severely disabling consequence to treatment with neuroleptic medication. 58 references. (Author abstract modified)

001862 Cho, Jun Tae; Bone, Stanley; Dunner, David L.; Colt, Edward; Fieve, Ronald R. Dunner: New York Psychiatric Institute, 722 West 168th St., New York, NY 10032 **The effect of lithium treatment on thyroid function in patients with primary affective disorder.** American Journal of Psychiatry. 136(1):115-116, 1979.

The incidence of clinically significant thyroid gland dysfunction among a group of affectively ill patients attending a lithium clinic was investigated. All Ss had primary affective disorder and were further classified into bipolar and unipolar subtypes. It was found that a subgroup of the 195 patient sample may be particularly prone to develop hypothyroidism while taking lithium carbonate. These are women with high frequencies of affective episodes. Findings may be useful to other clinicians and to investigators from large lithium research centers. 5 references.

001863 Chouinard, Guy; Annable, Lawrence; Ross-Chouinard, Andree; Nestoros, Joannis N. Department of Psychiatry, McGill University, Montreal, Quebec, Canada **Factors related to tardive dyskinesia.** American Journal of Psychiatry. 136(1):79-83, 1979.

The incidence of tardive dyskinesia among 261 schizophrenic oupatients treated with neuroleptics was investigated. A 31% incidence was found, and multiple linear logistic regressional analysis revealed a higher incidence among elderly patients, those with longer records of hospitalization, those for whom neuroleptic medication had little therapeutic effects, and those treated with fluphenazine. Patients manifesting tardive dyskinesia had fewer parkinsonian symptoms that those without the disorder, especially when tremors and akathisia were excluded from consideration. Multiple linear regression analysis revealed that brain-damaged patients and male patients were more susceptible to severe forms of the disorder, even though these factors were not implicated in its initial appearance. 16 references. (Author abstract modified)

001864 Cooper, James W., Jr.; Pesnell, Larkus H. University of Georgia School of Pharmacy, Athens, GA 30602 **Thioridazine-associated immune hemolytic anemia.** Southern Medical Journal. 71(11):1443-1444, 1978.

The first known association of the phenothiazine thioridazine (Mellaril) with the development of immune hemolytic anemia is reported. The clinical course and history are given for a 77-year-old woman in whom it appears that a 31 month treatment with thioridiazine was associated with a hemolytic process. A schematic presentation of drug treatment and hematopoietic response during hospitalization is given. Five mechanisms for a drug induced positive direct antiglobulin test are proposed, and implications for the widespread use of thioridazine in institutionalized elderly patients are mentioned. 5 references.

001865 De Bard; Mark L. Department of Emergency Services, Greene Memorial Hospital, 1141 North Monroe Dr., Xenia, OH 45385 **Diazepam withdrawal syndrome: a case with psychosis, seizure, and coma.** American Journal of Psychiatry. 136(1):104-105, 1979.

A case of diazepam withdrawal syndrome is reported in which symptoms included psychosis, seizure, and prolonged coma. The patient was hospitalized for involutional depression and prior prescription of the drug use was discontinued in favor of imipramine therapy. After 8 days, the withdrawal symptoms appeared. The case illustrates the addictive potential of diazepam and suggests the need for its decreased outpatient prescription. Prescriptions should not be issued for longer than 1 month, and abrupt discontinuation of treatment should not be considered in patients who have been on long-term and/or high dose therapy. 10 references.

001866 Direnfeld, L.; Spero, L.; Marotta, J.; Seeman, P. Boston University Dept. of Neurology; Boston Veterans Administration Hospital, 150 S. Huntington Avenue, Boston, MA 02130 **The L-dopa on-off effect in Parkinson disease: treatment by transient drug withdrawal and dopamine receptor resensitization.** Annals of Neurology. 4(6):573-575, 1978.

The hypothesis that patients with Parkinson disease partially compensate for neuron loss by developing denervation supersensitivity, and that prolonged levodopa (L-dopa) therapy leads to desensitization was investigated in a patient who had become unpredictably responsive to L-dopa. The patient had been taking L-dopa for 8 years and had exhibited severe dyskinesia/akinesia oscillation (on/off phenomenon) before the study. Results support the idea of dopamine receptor resensitization upon reduction of the L-dopa dosage. 10 references. (Author abstract modified)

001867 Frassanito, L. Ospedale Psichiatrico S. Niccolo, Siena, Siena, Italy /**Critical summary of the literature concerning tardive dyskinesia caused by neuroleptics.**/ Rassegna critica della letteratura in tema di discinesie tardive da neurolettici. Rassegna di Studi Psichiatrici (Siena). 67(3):427-448, 1978.

The literature concerning tardive dyskinesia is reviewed. The clinical aspects of the syndrome, pathogenesis, postmortem findings, and the prevention and pharmacological treatment are dis-

cussed. It is concluded that further studies on this crippling syndrome are necessary, in order to arrive at a better definition both of its clinical aspects, and of its pathogenesis and pharmacological treatment. 63 references. (Journal abstract modified)

001868 Friedman, Sarah L.; Caron, Albert J.; Brackbill, Yvonne; Caron, Rose F. Laboratory of Developmental Psychology, National Institute of Mental Health, Bldg. 15 K, 9000 Rockville Pike, Bethesda, MD 20014 **Obstetric medication and visual processing in 4- and 5-month-old infants.** Merrill-Palmer Quarterly of Behavior and Development. 24(2):111-128, 1978.

The question of whether obstetric medication is a long-term risk factor for visual processing as it is for auditory processing was investigated. A second research question was whether different types of medications given to mothers during delivery have different long-term effects on infants' ability to process information presented visually. Visual processing was evaluated in terms of decrement in visual attention during repeated exposures to a visual stimulus and overall level of attention to the stimulus. Subjects were 110 normal, full-term 4 and 5 month olds. It was anticipated that the use of obstetric medication would be associated with less efficient visual processing as reflected in slower decline in attention to and more overall looking at a visual stimulus which was repeatedly presented. The fact that all infants, regardless of perinatal medication history, exhibited significant decrement in visual attention suggests the possibility that, in infancy, the visual system is less vulnerable to obstetric medication than is the auditory system. Other possible explanations are discussed. 23 references.

001869 Geoffrey, Virginia Cleo. University of Maryland **Acoustical and perceptual differentiations of speech in Parkinson subjects alternately exhibiting akinesia and dyskinesia. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 7804495, HC$15. MF$7.50. 190 p. 1977.

Articulatory/phonatory coordinations and the timing of articulatory/phonatory events in the speech of 6 Parkinson subjects demonstrating akinesia and dyskinesia when on different doses of L-dopa are described. Speech comparisons were made using voice onset time and voicing rise time measures. Listeners' ratings of speech, examiner and subject evaluations, and speech function tasks also were examined. For the acoustical analysis and listener ratings, Parkinson subjects were asked to produce 3 CVC syllables containing voiceless initial plosives, each repeated in series. The results relating to slowness of movement were inconclusive. Listeners were able to separate three of the six subjects according to speech characteristics of the akinetic and dyskinetic states, but the degree of discriminability did not correlate clearly with any of the speech measures employed. Parkinson subjects in the dyskinetic state appeared to be more impaired on most speech tasks than they were while in the akinetic state. However, variability within and across subjects was large. (Journal abstract modified)

001870 Gold, Mark S.; Bowers, Malcolm B., Jr. Fair Oaks Hospital, 19 Prospect St., Summit, NJ 07901 **Neurobiological vulnerability to low-dose amphetamine psychosis.** American Journal of Psychiatry. 135(12):1546-1548, 1978.

A case report illustrating a model of drug induced psychosis wherein the drug acts as if it fits with some neurobiological predisposition in the patient, is presented. Patients with a good interpersonal developmental history but extreme sensitivity to a psychotomimetic drug may provide a model for neurobiological vulnerability to psychosis. Research support for the similarity between amphetamine induced and naturally occurring paranoid schizophrenia is cited. 21 references. (Author abstract modified)

001871 Gold, Mark S.; Sweeney, Donald R. Department of Psychiatry, Yale University School of Medicine, 34 Park Street, New Haven, CT 06511 **Perphenazine-induced systemic lupus erythematosus-like syndrome.** Journal of Nervous and Mental Disease. 166(6):442-445, 1978.

A case history of a 26-year-old patient who had a 7 year history of treatment for a schizophrenic illness and developed clinical as well as laboratory evidence for systemic lupus erythematosus (SLE) is presented. The differential diagnosis included phenothiazine induced SLE, SLE presenting with psychosis as a symptom, and SLE and psychosis occurring independently. The patient had a complete medical and neuropsychiatric workup and was followed for 12 months. After examining the various diagnoses, the phenothiazine induced SLE is suggested as the most likely diagnosis. Although the possibility of two diseases occurring independently in the same person did not explain the clinical and laboratory data, this possibility is not ruled out. SLE presenting with psychosis as a symptom could be ruled out by the workup and history. 27 references. (Author abstract modified)

001872 Guy, William; Petrie, William; Cleary, Patricia. Department of Psychiatry, Vanderbilt University, Nashville, TN 37240 **The incidence of treatment emergent symptoms under chlorpromazine and placebo conditions.** Psychopharmacology Bulletin. 14(2):22-24, 1978.

The incidence of treatment emergent symptoms under chlorpromazine and placebo conditions was studied. Results indicate that: 1) differentiation between chlorpromazine and placebo is best made on the basis of anticholinergic rather than CNS symptomatology; 2) anticholinergic, central nervous system and autonomic nervous system factors appear to exhibit dose relationships; 3) schizophrenic patients appear to be placebo resistant; and 4) nonschizophrenic patients exhibit a much higher incidence of symptomatology than schizophrenics, particularly in the neurotic factor. The symptoms composing this factor are, in addition to their occurrence as treatment emergent symptoms, symptoms characteristic of psychopathological conditions as well. 1 reference.

001873 Haisova, L.; Drvota, S. 120 00 Praha 2, Katerinska 32, Czechoslovakia **/Hallucinogenic effect of ketamine./** Halucinogenni ucinek ketaminu. Ceskoslovenska Psychiatrie (Praha). 74(3):167-175, 1978.

Hallucinogenic manifestations connected with the use of ketamine (a derivative of fencyclidine) for total anesthesia are discussed. Several typical experiences are described, and are categorized by generally recognized symptomatology: subspecific, geometrically symmetrical, and objective phases. The possibility of further complications of ketamine anesthesia, such as delirious modifications of the phase of the postanesthetic period, temporally postponed manifestations, and flashback imagery, is discussed. Possibilities of alleviating the hallucinatory effect of ketamine by suitable premedication are presented. 13 references. (Journal abstract modified)

001874 Hall, Richard C. W.; Popkin, Michael K.; Kirkpatrick, Brian. Department of Psychiatry, University of Texas Medical School, 6400 West Cullen, Houston, TX 77025 **Tricyclic exacerbation of steroid psychosis.** Journal of Nervous and Mental Disease. 166(10):738-742, 1978.

Tricyclic exacerbation of steroid psychosis in four patients in a series of 14 cases of steroid psychosis where steroids were used to treat disease not affecting the CNS was examined. All cases demonstrate a predominantly affective mood change prior to initiation of treatment with tricyclic antidepressants by the primary physician. In each case, the patient's mental state dete-

riorated rapidly following initiation of tricyclics in middose range (i.e.,100 to 150mg/d.). These agents produce a qualitative change in the nature of the patient's psychosis, rather than simply aggravating preexistent features. All patients experienced visual hallucinations within 4 days of tricyclic administration. Persistent auditory hallucinations (two cases) became threatening, accusatory, and constant. The exacerbated psychosis cleared rapidly with the discontinuation of the antidepressant and the addition of a phenothiazine (400 to 800mg). Phenothiazines were also required to produce a salutary effect in the 10 patients who did not receive tricyclics, but at an average dose of only 200mg. Steroids raise the effective blood level of tricyclics and alter central catecholamine movement across membranes. These changes may represent the mechanism for exacerbation of steroid psychoses. 8 references. (Author abstract)

001875 Hann, Josef. Postfach 1260 (Bezirkskrankenhaus), D-8520 Erlangen, Germany /**Electroshock, new medications and the redlight of contraindication.**/ Elektrokrampf, neue Medikamente und das Rotlicht einer Kontraindikation. Offentliche Gesundheitswesen (Stuttgart). 40(3):128-130, 1978.

Electroshock therapy and psychopharmaceuticals used in the past 30 years in the treatment of mental illness are discussed. It is noted that use of electroshock is presently limited due to legal considerations, undesirable side-effects, and widespread use of major tranquilizers and other psychoactive drugs. The discovery and development of reserpine, chlorpromazine, and acetylcholine are discussed along with some of their side-effects, especially those that affect blood pressure. 10 references. (Journal abstract modified)

001876 Kales, Anthony; Scharf, Martin B.; Kales, Joyce D. Sleep Research and Treatment Center, Pennsylvania State University, College of Medicine, Hershey, PA 17033 **Rebound insomnia: a new clinical syndrome.** Science. 201(4360):1039-1041, 1978.

Rebound insomnia, which followed the withdrawal of three benzodiazepine hypnotic drugs, each of which had been administered in a single nightly dose for only short-term periods, is reported and described. The intense adverse effect on sleep is attributed to the short duration of the action of these drugs. A hypothesis involving benzodiazepine receptors in the brain is proposed, in which there is a delay or lag in replacement of endogenous benzodiazepine like molecules after the abrupt withdrawal of exogenous drugs. 12 references. (Author abstract)

001877 Kane, John; Quitkin, Frederic; Rifkin, Arthur; Klein, Donald F. Dept. of Psychiatry, Long Island Jewish-Hillside Medical Center, Glen Oaks, NY 11004 **Comparison of the incidence and severity of extrapramidal side effects with fluphenazine enanthate and fluphenazine decanoate.** American Journal of Psychiatry. 135(12):1539-1542, 1978.

In a study of the incidence and severity of extrapyramidal side-effects, 49 schizophrenic outpatients stabilized on oral antipsychotic medication and procyclidine received one of two doses of fluphenazine enanthate or fluphenazine decanoate and were examined for extrapyramidal side-effects 1 and 2 weeks later. Extrapyramidal side-effects were present in 30 patients (61%) but were clinically significant in only 11 patients (22%). Fluphenazine enanthate produced more clinically significant extrapyramidal symptoms, particularly akathisia, than did fluphenazine decanoate. 18 references. (Author abstract modified)

001878 Kane, John; Rifkin, Arthur; Quitkin, Frederic; Klein, Donald F. Department of Psychiatry, Long Island Jewish-Hillside Medical Center, Glen Oaks, NY 11004 **Extrapyramidal side effects with lithium treatment.** American Journal of Psychiatry. 135(7):851-853, 1978.

Thirty eight male and female patients (mean age 36 years) who had received lithium carbonate for 3 months to 5 years were neurologically examined to determine the presence of extrapyramidal side effects. No patient had received neuroleptics for 3 months before the examination, which was carried out by a rater blind to the patient's diagnosis and treatment. Definite cogwheeling was found in two patients. The results confirm previously reported occurrence of cogwheeling in lithium treated patients. 9 references. (Author abstract)

001879 Kaplan, Seymour R.; Murkofsky, Charles. NRS Postdoctoral Fellowship Training, 1300 Morris Park Ave., Bronx, NY 10461 **Oral-buccal dyskinesia symptoms associated with low-dose benzodiazepine treatment.** American Journal of Psychiatry. 135(12):1558-1559, 1978.

A case report of the temporal correlation between low dose benzodiazepine treatment and the occurrence of oral-buccal dyskinesia similar to the oral symptoms associated with neuroleptic drug induced tardive dyskinesia is presented. Studies of brain mechanisms associated with benzodiazepines indicating interaction with neurotransmitters, including GABA, glycine, norepinephrine, and serotonin are cited. It is recommended that clinicians consider the possible causal effect of benzodiazepine when treating cases of involuntary oral-buccal movements in patients whose drug regimen includes benzodiazepine treatment. 6 references.

001880 Keckich, Walter A. Department of Psychiatry and Behavioral Sciences, University of Washington School of Medicine, Seattle, WA 98195 **Neuroleptics: violence as a manifestation of akathisia.** Journal of the American Medical Association. 240(20):2185, 1978.

A case history is reported in which akathisia developed as a side-effect of neuroleptic drug treatment, resulting in violent behavior which the drug was meant to alleviate. The 29-year-old male patient had a characterological and social predisposition to violence. He received imipramine, which also increased hostility and aggressiveness. The akathitic reaction was the final event which precipitated homicidal behavior. Since haloperidol and other neuroleptics are commonly used in such patients, clincians should be aware that they can cause a violent episode if there is a severe akathitic reaction. 2 references.

001881 Kendler, Kenneth S. Department of Psychiatry, Yale University School of Medicine, 34 Park St., New Haven, CT 06519 **Amitriptyline-induced obesity in anorexia nervosa: a case report.** American Journal of Psychiatry. 135(9):1107-1108, 1978.

A case study of obesity induced by amitriptyline treatment of anorexia nervosa is presented. Amitriptyline treatment can produce modest weight gains in anorexia nervosa. A 20-year-old woman who had been anorectic for three years was treated with amitriptyline, which produced an increase in appetite. Weight gain continued until the patient was slightly over her ideal body weight, the medication was discontinued and depression returned. Weight gain continued until the patient was 25% over her ideal body weight. The neurochemical control of body weight is discussed in relation to anorexia nervosa's connection with affective illness. 9 references.

001882 Ketai, Richard; Matthews, John; Mozden, John J., Jr. University Hospital, University of Michigan Medical Center, 1405 East Ann St., Ann Arbor, MI 48109 **Sudden death in a patient taking haloperidol.** American Journal of Psychiarty. 136(1):112-113, 1979.

A case of sudden death is reported in a young woman who received rapid tranquilization with increasing doses of haloperidol and for whom no obvious cause of death was found. Daily

dosages greater than 100mg were required for the patient's refractory psychosis, and no effects were noted from 140mg on the day before death. The possibility of an idiosyncratic response to haloperidol is suggested. 9 references.

001883 Laughren, Thomas P.; Brown, Walter Armin; Williams, Bradford W. Providence Veterans Administration Hospital, Davis Park, Providence, RI 02908 **Serum prolactin and clinical state during neuroleptic treatment and withdrawal.** American Journal of Psychiatry. 136(1):108-110, 1979.

Data are presented to confirm earlier findings that male patients taking neuroleptics on an acute or chronic basis have significantly higher serum prolactin concentrations than during drug free states. The patients were 11 male outpatients aged 21 to 59 years with diagnoses of chronic schizophrenia, hysterical neurosis, and alcoholism. The relationship between serum prolactin and psychological state during chronic treatment with thioridazine and haloperidol is demonstrated, along with concentrations upon withdrawal from and return to treatment. 7 references.

001884 Liebowitz, Michael R.; Nuetzel, Eric J.; Bowser, Anstiss E.; Klein, Donald F. New York State Psychiatric Institute, 722 West 168th Street, New York, NY 10032 **Phenelzine and delusions of parasitosis: a case report.** American Journal of Psychiatry. 135(12):1565-1566, 1978.

A case report of delusions of parasiiosis (the mistaken, fixed, firm belief that one is infested by parasites) in a patient taking monamine oxidase inhibitors (MAOIs) is presented. During the 18th week of treatment with psychotherapy and 30mg/day of phenelzine in a maintenance program for hysteroid dysphorics, the patient complained of infestation with small black bugs. Mechanisms underlying the delusion are discussed. It is recommended that patients with a history of brief psychotic experiences who are being treated with MAOIs be monitored for these symptoms. 10 references.

001885 Mann, Stephen C.; Boger, William P. Veterans Administration Hospital, Bldg. 2, Coatesville, PA 19380 **Psychotropic drugs, summer heat and humidity, and hyperpyrexia: a danger restated.** American Journal of Psychiatry. 135(9):1097-1100, 1978.

Hyperpyrexia as a complication of psychotropic drug treatment is discussed. A case of hyperpyrexia in a patient receiving psychotropic agents during a summer heat wave is reported. Massive muscle destruction with myoglobinuria and acute renal failure occurred. Causative mechanisms, preventive measures, and the benefits of prompt recognition and treatment of this condition are discussed. 28 references. (Author abstract modified)

001886 Marcus, Julius; Mulvihill, Francis J. 1574 Dillon Avenue, East Meadow, NY 11554 **Agranulocytosis and chlorpromazine.** Journal of Clinical Psychiatry. 39(10):784-786, 1978.

A case of death associated with chlorpromazine agranulocytosis is described and the pertinent literature is reviewed. The risk of agranulocytosis from chlorpromazine depends on many factors. Among these are cumulative dosage, deficiencies in bone marrow due to aging, replacement by tumor, action of other noxious agents, metabolic and nutritional injury, genetic vulnerability, and delayed excretion. Daily evaluation of the need for medication, the cumulative dose, and signs of infection and fever can reduce the incidence. 8 references. (Author abstract modified)

001887 McCrum, Ivan D.; Guidry, James R. Department of Psychiatry, Veterans Administration Hospital, Seventh St. and Indian School Rd., Phoenix, AZ 85012 **Procainamide-induced psychosis.** Journal of American Medical Association. 240(12):1265-1267, 1978.

A case report is provided to illustrate the nature of procainamide induced psychosis. The 45-year-old male patient had a 10 year history of manic depressive illness, and hospitalization for premature ventricular contractions revealed that procainamide prescribed to control the cardiac problems resulted in psychotic behavior. The possible role of the drug in other medical situations involving functional psychosis is suggested. 3 references.

001888 McLean, Paul; Casey, Daniel E. Metropolitan Beaverbrook Unit, Metropolitan State Hospital, Waltham, MA **Tardive dyskinesia in an adolescent.** American Journal of Psychiatry. 135(8):969-971, 1978.

The course and treatment of a disturbed 15-year-old boy who developed incapacitating tardive dyskinesia following neuroleptic medication is presented. The case is discussed in light of other reports in the literature which examine clinical presentation, differential diagnosis, proposed pathophysology, and treatment. The condition resolved during treatment with deanol. It is concluded that lithium carbonate was a useful alternative to neuroleptics in the management of the adolescent's disturbed behavior. 15 references. (Author abstract modified)

001889 Mills, Donald G. Department of Pharmacology, University of Western Ontario, Faculty of Medicine, London, Ontario, Canada N6A 5C1 **Effects of methaqualone on blood platelet function.** Clinical Pharmacology and Therapeutics. 23(6):685-691, 1978.

The effects of methaqualone, diphenhydramine, and a combination of the two drugs on blood platelet function were investigated. Exposure of human platelets in platelet rich plasma to methaqualone in vitro resulted in nearly complete inhibition of the secondary phase and significant inhibition of the primary phase of adenosine diphosphate (ADP) induced aggregation. Both the slope and the height of collagen induced aggregation responses were reduced significantly in vitro by the drug. The degree of inhibition of ADP induced aggregation was only slightly greater in the presence of methaqualone and diphenhydramine than in the presence of methaqualone alone. The platelets of rabbits injected intravenously with methaqualone demonstrated a significantly decreased ability to aggregate with ADP and collagen 30 and 60 minutes after administration of the drug. Results suggest that a drug induced defect of blood platelet function may be responsible for the bleeding associated with methaqualone toxicity. 42 references. (Author abstract modified)

001890 Neil, John F.; Licata, Sandra M.; May, Susan J.; Himmelhoch, Jonathan M. Western Psychiatric Institute and Clinic, 3811 O'Hara Street, Pittsburgh, PA 15261 **Dietary noncompliance during treatment with tranylcypromine.** Journal of Clinical Psychiatry. 40(1):33-37, 1979.

A systematic study of compliance with monoamine oxidase inhibitor dietary precautions was carried out in a population of 98 depressed patients receiving tranylcypromine. Strict adherence to the recommended diet was seen in only a third of the patients, while nearly 40% acknowledged substantial noncompliance. Noncompliance was more common among patients whose duration of treatment was longer. The incidence of hypertensive reactions did not differ significantly from that reported during the prediet era, but no serious complications ensued. Factors that may encourage noncompliance are discussed, and studies of methods to improve dietary adherence are proposed. 17 references. (Author abstract)

001891 Patrick, J. M.; Sempik, Anne K. Department of Physiology and Pharmacology, Medical School, Queen's Medical

Centre, Clifton Boulevard, Nottingham NG7 2UH, England **The effect of diazepam on the threshold of the ventilatory responses to CO2.** British Journal of Pharmacology (London). 64(3):454P-455P, 1978.

In a paper presented at the September 1978 meeting of the British Pharmacological Society at the University of Nottingham, the effect of diazepam on the threshold of the ventilatory response to carbon dioxide (V,PCO2 response) is reported. A single oral dose of 5mg diazepam caused an insignificant fall in threshold of 0.1torr whereas 10mg caused a significant increase of threshold of 2.76 torr in healthy subjects. Doses of 10mg did not cause a significant change of slope. These results confirm that diazepam at commonly prescribed doses causes significant respiratory depression by raising the threshold or depressing the slopes of the V,PCO2 response. 5 references. (Author abstract modified)

001892 Paty, J.; Bourgeois, M. Universite Bordeaux II, 146, avenue Leo-Saignat, F-33076 Bordeaux, France **/The potential risks of psychotropic drugs with dipropylacetamide (16 observations)./** Les risques des potentialisations de psychotropes par dipropylacetamide (16 observations). L'Encephale (Paris). 4(3):251-265, 1978.

Sixteen case reports are presented in which the potential dangers of combining psychotropic drug treatment with dipropylacetamide administration were observed. Nineteen control cases also were included in which dipropylacetamide used alone or in association with other treatment was well tolerated. The development of depression, particularly with the tricyclic compounds, lorazepam and 5-hydrosyctyptamine, is emphasized. Clinical signs include fast development of the syndrome, with neurological disturbances, fever, and problems in vigilance/wakefulness behavior that are aggravated by spasmodic cerebellar symptoms. EEG data are especially important for diagnosis and prognosis in such cases, since plasma level determination does not yield sufficient information. The observation that several psychotropic drugs interact with dipropylacetamide supports recent hypotheses on the probable site of action for this drug. 17 references. (Journal abstract modified)

001893 Piggot, Leonard R. Lafayette Clinic, 951 East Lafayette, Detroit, MI 48207 **Routine WBCs and agranulocytosis in children.** American Journal of Psychiatry. 135(8):977-978, 1978.

The use of routine white blood counts (WBCs) to detect agranulocytosis in children is discussed. Routine WBCs were obtained at the second and fourth weeks and then monthly for children receiving psychotropic medications over the course of a 10 year period. A total of 548 patient medication exposures including 248 patients given phenothiazines, 161 given tricyclic antidepressants, and 139 given stimulants, were observed. Routine hematologic surveilance of patients taking phenothiazines was not helpful in diagnosing incipient agranulocytosis. It would appear that a less expensive and equally effective approach for children would be to watch for the development of clinical signs indicative of agranulocytosis and then to withhold the medication, obtaining a WBC and differential as quickly as possible. 10 references.

001894 Price, P.; Parkes, J. D.; Marsden, C. D. University Department of Neurology, Institute of Psychiatry and King's College Hospital, London SE5 8AZ, England **Tiapride in Parkinson's disease.** Lancet (London). No. 8099:1106, 1978.

In a letter to the editor, the use of tiapride (N-(diethyl-aminoethyl)-2-methoxy-5-methylsulphonyl-benzamide hydrochloride) to reduce levodopa induced dyskinesias in ten patients with idiopathic Parkinson's disease on stable dopamine replacement therapy is discussed. Drug induced dyskinesias were reduced by tiapride in nine of the ten patients. The worsening of Parkinsonian disability in seven of these patients was reversed by increasing the dose of levodopa, and in five, this increase did not result in more severe dyskinesias. 9 references.

001895 Reed, K.; McKim. H. R. T.R.I.M.S., 1300 Moursund, Texas Medical Center, Houston, TX 77030 **ECG changes in pure imipramine overdose as function of plasma level.** Canadian Psychiatric Association Journal (Ottawa). 23(8):573-577, 1978.

ECG changes resulting from pure imipramine overdose as a function of plasma level were examined via a case study of a suicide attempt. Early toxic signs leading to cardiac arrest and the recovery from coma are discussed. The ECG, along with corresponding plasma levels of imipramine and its metabolite desmethylimipramine, are given as a function of time after ingestion. The relative toxicity of these metabolites and the use of anticholinesterase in acute management is considered. 8 references. (Author abstract modified)

001896 Richelson, Elliott. Department of Psychiatry, Mayo Medical School, University of Minnesota, Rochester, MN 55901 **Tricyclic antidepressants and neurotransmitter receptors.** Psychiatric Annals. 9(4):16, 18, 23-25, 29-32, 1979.

The use of data from in vitro studies for anticipating side-effects of tricyclic antidepressants and the way in which this information can be of use to the practicing psychiatrist are discussed. The interactions of psychotherapeutic drugs, particularly tricyclic antidepressants, with neurotransmitter receptors were analyzed, and the clinical relevance of these interactions indicated. It is noted that the tricyclic antidepressants and some antihistamines have biochemical, pharmacologic, and behavioral similarities. It is suggested that the H1-receptor blockade by tricyclic antidepressants likely relates to the sedative effects of these compounds. Recent developments indicate that these and other antidepressant drugs and treatments (e.g.,electroconvulsive therapy) cause decreased sensitivity of catecholamine receptors. Knowledge of the pharmacologic effects of tricyclic antidepressants gives a rational basis for understanding interactions of these drugs with other drugs and for understanding tricyclic antidepressant side-effects. 55 references.

001897 Rosen, Arnold. 52 East 72nd St., New York, NY 10021 **Case report: symptomatic mania and phencyclidine abuse.** American Journal of Psychiatry. 136(1):118-119, 1979.

A case of symptlatic mania resulting from phencyclidine (PCP or angel dust) abuse is reported. The symptoms decreased only after use of electroconvulsive therapy and showed no response to treatment with neuroleptics. The importance of correct diagnosis of an affective illness is emphasized in such cases in light of the increasing incidence of PCP abuse and evidence of the drug$s toxicity. 6 references.

001898 Schubert, Daniel S. P. Department of Psychiatry, Cleveland Metropolitan General Hospital, 3395 Scranton Rd., Cleveland, OH 44109 **Use of bethanechol chloride with phenothiazines: a case report.** American Journal of Psychiatry. 136(1):110-111, 1979.

A case study involving blurred vision produced by the anticholinergic effects of phenothiazines is reported and the use of bethanechol chloride to counteract these side effects is briefly described. It is contended that blurred vision is a particularly distressing symptom to many psychiatric patients who are taking antipsychotics with or without antiparkinsonian agents and will lead them to consider discontinuing the medication. Bethanechol chloride may be helpful in such cases, but caution should be exercised since this drug may also have undesirable side effects. 2 references.

001899 Schyve, Paul M. Smithline, Francine; Meltzer, Herbert Y. Illinois State Psychiatric Institute, 1601 W. Taylor St., Chicago, IL 60612 **Neuroleptic-induced prolactin level elevation and breast cancer.** Archives of General Psychiatry. 35(11):1291-1301, 1978.

The evidence that neuroleptics may increase risk of breast cancer via their effects on prolactin secretion is reviewed. All available neuroleptics, including reserpine, raise serum prolactin levels. Elevated serum prolacting level increases the incidence of spontaneously occurring mammary tumors in mice, and increases the growth of established carcinogen induced mammary tumors in rats. Caution is necessary in extrapolating this relationship to human mammary tumors because human and rodent tumors differ in important characteristics, including hormone responsiveness. Serum prolactin levels in women with, or at-risk for, breast cancer have generally been normal, and only a minority of human mammary tumors respond to changes in serum prolactin levels. Epidemiologic studies have failed to demonstrate an increased risk of breast cancer associated with use of neuroleptics or reserpine. Thus, although some human mammary tumors are prolactin dependent, the available evidence does not demonstrate an increased risk of breast cancer in women receiving neuroleptics. It was found that: 1) additional epidemiologic studies of the incidence of mammary tumors in women treated with neuroleptics are desirable; 2) it is premature to mandate warning patients of an unknown and undemonstrated increase in the risk of developing breast cancer associated with neuroleptic treatment; 3) detection of existing mammary tumors by breast examination prior to administration of neuroleptics is desirable; and 4) development of antipsychotic drugs that do not increase serum prolactin level may by indicated. 136 references. (Author abstract)

001900 Sethi, N.; Manchanda, M. Central Drug Research, Lucknow, India **Maternal drug histories and congenital abnormalities.** Indian Journal of Psychiatry (Poona). 20(2):191-192, 1978.

All neonates with one or more congenital abnormalities at one hospital, over a 15 month period, were studied by taking a detailed history from the mother during the antenatal period, with particular emphasis on psychotropic drugs taken during pregnancy. Of the 58 neonates with congenital abnormalities, mothers reported use of diazepam and chlorpromazine (one each), hormonal preparations (5), analgesics (3), antiemetics (2), benzathine penicillin (1), ergot (1), and ayurvedic and homeopathic compounds (1 each). Results did not substantiate a correlation of psychotropic drugs to congenital abnormality, however, other compounds which may have contributed to the malformations were found. 12 references.

001901 Solomon, Jonathan G. Bayberry Psychiatric Hospital, 530 East Queen Street, Hampton, VA 23669 **Multiple sclerosis masquerading as lithium toxicity.** Journal of Nervous and Mental Disease. 166(9):663-665, 1978.

A case report of multiple sclerosis masquerading as lithium toxicity in a manic-depressive patient undergoing lithium therapy, is presented. Dysarthria and ataxia were attributed to lithium toxicity occurring at therapeutic serum levels. It is concluded that: 1) lithium therapy is effective with manic-depressive patients, 2) adverse side-effects are infrequent and can occur at toxic or therapeutic serum lithium levels, and 3) the exceptional patient may have a second illness incorrectly attributed to lithium toxicity. 22 references. (Author abstract modified)

001902 Stillner, Verner; Popkin, Michael K.; Pierce, Chester M. Acute Admissions Unit, Alaska Psychiatric Institute, 2900 Providence Ave., Anchorage, AK 99504 **Caffeine-induced delirium during prolonged competitive stress.** American Journal of Psychiatry. 135(7):855-856, 1978.

An account is provided of a caffeine induced delirium which occurred during a prolonged competitive stress situation. A 28-year-old single Alaskan male, who was competing in a dog sled race, experienced tremor, impaired memory, altered levels of consciousness, vertigo, pronounced anxiety, and sensory disturbances within 30 minutes of serially consuming about 1070mg of caffeine. The symptoms had fully remitted after 6 hours, and the subject's physical health signs were normal. The case corroborates Ritchie's (1975) contention about the toxic effects of caffeine ingested at levels of 1000mg and above. 8 references.

001903 Storrie, Michael C.; Scher, Maryonda; McGuire, James; Bokan, John. VA Hospital, 4435 Beacon Avenue South, Seattle, WA 98108 **Thrombocytopenia in the absence of leukopenia associated with the use of neurcoleptics.** Journal of Clinical Psychiatry. 39(10):779-781, 1978.

A case is reported in which thrombocytopenia developed in a patient for whom accurate drug history and repeated hemotologic evaluations were available. Thrombocytopenia is a fairly uncommon side-effect of phenothiazine treatment, and usually appears in the presence of a concomitant leukopenia. In the patient discussed, the illness appeared in the presence of a long known Beta thalassemia, but without evidence of alteration in the myeloid or lymphoid series. Platelet changes were seen in the presence of a butyrophenone and an aliphatic phenothiazine. It is of note that two piperazine derivatives were not associated with platelet decline. 6 references. (Author abstract modified)

001904 Tamminga, Carol; Evans, Henry; Case, Thomas N. NIMH, 9000 Rockville Pike, Bethesda, MD 20014 **GABA agonist therapy in tardive dyskinesia. (Unpublished paper).** Bethesda, MD, NIMH, 1978. 2 p.

A reassessment of treatment strategies in tardive dyskinesia is presented. Muscimol, a potent and specific gamma-aminobutyric acid (GABA) agonist, was administered orally to seven chronic schizophrenic patients with tardive dyskinesia. At dose levels ranging from 5mg to 9mg, the involuntary movements decreased significantly in all of the patients, with peak effect occurring at 2 hours. Because the behavioral side-effects of muscimol prohibit its general or continued use in movement disorder patients, evaluation of additional GABA agonist drugs is needed. GABA agonist therapy may symptomatically alleviate movements in tardive dyskinesia patients and could alter the course of the side-effect in those patients requiring continued neuroleptic treatment. (Author abstract modified)

001905 Taylor, M.; Galloway, D. B.; Petrie, J. C.; Davison, J. F.; Gallon, S. C.; Moir, D. C. Department of Therapeutics and Clinical Pharmacology, University of Aberdeen, Aberdeen, Scotland **Psychotomimetic effects of pentazocine and dihydrocodeine tartrate.** British Medical Journal (London). 2(6146):1198, 1978.

Psychotomimetic effects of pentazocine and dihydrocodeine tartrate were examined in 71 subjects on pentazocine, 93 on dihydrocodeine, and a group of matched controls. Results indicate that 10% of pentazocine patients had a major psychotomimetic disturbance, while a further 10% had vivid dreams. Of dihydrocodeine patients, 4% had a psychotomimetic disturbance, and a further 4% had disturbed dreams. The drugs were given in the usually recommended doses, and no relationship was observed between the occurrence of psychotomimetic phenomena and the route or frequency of administration or the dose. 5 references.

001906 Tupin, J. P.; Schuller, A. B. Dept. of Psychiatry, School of Medicine, University of California, Davis, CA Lith-

lum and haloperidol incompatibility reviewed. Psychiatric Journal of the University of Ottawa (Ottawa). 3(4):245-251, 1978.

Cases which describe a lithium/haloperidol synergism resulting in permanent neurological defects are reviewed. It is contended that symptoms of these cases seem to be compatible with lithium intoxication alone. The use of lithium and neuroleptic medications, particularly in hyperactive and seriously disturbed, diagnostically ambiguous individuals, is discussed and recommendations for treatment given. 22 references. (Author abstract modified)

001907 Yesavage, J. A.; Freeman, A. M.; Bourgeois, M. L. Department of Psychiatry and Behavioral Sciences, Stanford School of Medicine, Palo Alto, CA 94304 **Time distortion in acute phencyclidine (PCP) psychosis. A correlation between 30 seconds estimation and urine drugs levels.** L'Encephale (Paris). 4(3):281-285, 1978.

In 15 patients hospitalized with phencyclidine (PCP psychosis, several measures of psychopathy, including time distortion, were examined in relationship to urine PCP levels and duration of hospitalization. Impaired ability to estimate 30 second durations correlated significantly with a higher urine PCP level and longer hospitalization. The 30 sec test may, therefore be useful in clinical management of patients with PCP psychosis, particularly when there are no measurable PCP urine levels. 10 references. (Journal abstract modified)

001908 Ziegler, Vincent E.; Taylor, John R.; Wetzel, Richard D.; Biggs, John T. Dept. of Psychiatry, Washington University School of Medicine, 4940 Audubon Ave., St. Louis, MO 63110 **Nortriptyline plasma levels and subjective side effects.** British Journal of Psychiatry (London). 132:55-60, 1978.

Nortriptyline plasma levels and the incidence and severity of the common subjective side-effects of the tricyclic antidepressants were determined in 26 patients during 6 weeks of treatment with nortriptyline. The total corrected (treatment minus pretreatment) score of the eight side-effects most independent of the severity of depression correlated (0.60) with the nortriptyline plasma level. Increased perspiration (0.59) and dry mouth (0.54) were the individual corrected side-effects which most consistently correlated with the plasma level. It is suggested that these subjective side-effects may serve as clinically useful guides to dosage adjustments during treatment, though their value is limited by the magnitude of the correlations and the need to correct for their presence prior to treatment. 19 references. (Author abstract)

16 METHODS DEVELOPMENT

001909 Birch, N. J.; Robinson, Delia; Inie, R. A.; Hullin, R. P. Department of Biochemistry, University of Leeds, 9 Hyde Terrace, Leeds LS2 9LS, England **Lithium-6 stable isotope determination by atomic absorption spectroscopy and its application to pharmacokinetic studies in man.** Journal of Pharmacy and Pharmacology (London). 30(11):683-685, 1978.

A simple method was developed for the determination of the stable isotope lithium-6 (6Li) by atomic absorption spectroscopy. Analysis of total lithium content by flame emission spectroscopy was followed by a separate determination of atomic absorption by the sample of the light emitted by separate hollow cathode lamps made from the isotopes 6Li and 7Li. This method was used to study the pharmacokinetics of 6Li in four normal volunteers previously loaded with 7Li. Results indicate that the rate of appearance of lithium in blood is unaffected by the previous state of lithium loading. 7 references. (Author abstract modified)

001910 Branconnier, Roland J.; Cole, Jonathan O. Geriatric Psychopharmacology Unit, IRR Building, Boston State Hospital, Boston, MA 02124 **The impairment index as a symptom-independent parameter of drug efficacy in geriatric psychopharmacology.** Journal of Gerontology. 33(2):217-223, 1978.

A method for the determination of drug efficacy in geriatric psychopharmacology is presented. Sixty patients with mild senile organic brain syndrome were evaluated by a battery of neuropsychological tests. Subsequently these patients were randomly assigned to either drug or placebo treatment for 90 days. One group received 300mg per day of Naftidrofuryl (Praxilene) while the other received identical placebo. Upon retest, the data indicate that Naftidrofuryl produced significant improvements in reaction time, short-term memory and iconic memory. Ten neuropsychological test scores, as well as two Profile of Mood States mood factors were incorporated into an Impairment Index. This index was drug sensitive and proved to be symptom independent. 9 references. (Author abstract)

001911 Costa, Jonathan L.; Stark, Helen; Shafer, Brenda; Corash, Laurence; Smith, Mark A.; Murphy, Dennis L. Clinical Neuropharmacology Branch, NIMH, NIH, Bethesda, MD 20014 **Maximal packet size for serotonin in storage vesicles of intact human platelets.** Life Sciences (Oxford). 23(22):2193-2197, 1978.

The maximal packet size for serotonin (5HT) in vesicles of intact, washed human platelets was determined and the rate of exchange between 5HT in vesicles and in the external milieu was measured. Vesicles were trace labeled with 3H-5HT and subsequently permitted to accumulate larger amounts of C14-5HT from the extracellular medium. Parallel platelet aliquots were incubated with unlabeled 5HT, and total and thrombin releasable 5HT were measured by an enzymatic assay. Results indicate that when vesicles are full, a single molecule of 5HT newly added from the extracellular medium displaces a single molecule of vesicular 5HT. The cytoplasmic compartment also appeared to exhibit maximal 5HT holding capacity; once vesicles were filled, the total amount of cellular 5HT remained unchanged, despite continued exchange of C14-5HT and 3H-5HT. Results are consistent with the suggestion that platelet endogenous 5HT can be completely exchanged with extracellular 5HT during an incubation period of several hours. 10 references. (Author abstract modified)

001912 Devos, J. E. Departement de Recherches Medico-Biologiques, Sandoz S.A., Basel, Switzerland /**The temporal development of the electroencephalographic signal. Pharmacological applications.**/ Evolution temporelle du signal electroencephalographique. Applications en pharmacologie. L'Encephale (Paris). 4(3):267-279, 1978.

A minicomputer technique is described which allows discrimination between the sleep/wakefulness aspects of psychoactive drug action. The method has been used for data reduction in studies of sleep/wakefulness cycles with continuous EEG and EMG recording. On-line computation of Hjorth parameters with a microcomputer and further processing with the minicomputer are involved. A pharmacological approach to such research is proposed which avoids a strict distinction between sleep phases and concentrates on the continuum of vigilance states. Different methods for demonstrating drug induced modifications in that continuum are described. 9 references. (Journal abstract modified)

001913 Garceau, Y.; Davis, I.; Hasegawa, J. Biopharmacy Laboratory, Pharmacy Research and Development Division, Ayerst Laboratories, Inc., Rouses Point, NY 12979 **Fluorometric TLC determination of free and conjugated propranolol, naphthoxylactic**

acid, and p-hydroxypropranolol in human plasma and urine. Journal of Pharmaceutical Sciences. 67(6):826-831, 1978.

Sensitive, specific, and reproducible thin layer chromatographic (TLC) methods were developed for the determination of propranolol and its major metabolities in humans, free and conjugated naphthoxylactic acid, and free and conjugated p-hydroxypropranolol. The drug or metabolites are extracted from plasma or urine with ether and applied to TLC plates of silica gel or microcrystalline cellulose. After development, TLC plates are scanned in a spectrodensitometer equipped to measure fluorescence in the ultraviolet and blue regions of the light spectrum. Quantitation is achieved by comparing the areas under the peaks obtained from the unknowns to those obtained from standards applied to the same plate. Limits of quantitation in plasma are: free propranolol, 2ng/ml; free p-hydroxypropranolol, 10ng/ml; conjugated propranolol, 15ng/ml; total naphthoxylactic acid, 25ng/ml; and conjugated p-hydroxypropranolol, 50ng/ml. These methods were used to obtain plasma level data in a volunteer after a single dose of propranolol and in patients under propranolol therapy. 20 references. (Author abstract)

001914 Honecker, Henning; Rommelspacher, Hans. Institut fur Neuropsychopharmakologie der Freien Universitat Berlin, Ulmenallee 30, D-1000 Berlin 19, Germany **physiologically occurring compound of indole metabolism.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 305(2):135-141, 1978.

A sensitive method for measuring tetrahydronorharmane (THN) in human urine and in the urine and forebrain of rats is described. The compound is extracted into diethyl ether, separated by thin layer chromatography (TLC), acetylated with radiolabeled acetic anhydride, and further isolated by two dimensional TLC development. The existence of THN in human urine was demonstrated, using chromatography with different solvent systems, cocrystallization, isotope dilution, and mass spectrometry. The amount of THN in urine varied over a wide range. THC was also demonstrated in the forebrain of female Wistar rats; the concentration increased after loading with tryptamine. Results are discussed in relation to the hypothesis that THN acts as a neuromodulator. 18 references. (Author abstract modified)

001915 Hungund, Basalingappa L.; Hanna, Maurice; Winsberg, Bertrand G. Department of Psychiatry and Behavioral Science, Health Sciences Center, State University of New York, Stony Brook, NY 11794 **A sensitive gas chromatographic method for the determination of methylphenidate (ritalin) and its major metabolite alpha-phenyl-2-piperidine acetic acid (ritalinic acid) in human plasma using nitrogen-phosphorous detector.** Communications in Psychopharmacology. 2(3):203-208, 1978.

Plasma levels of methylphenidate and its metabolite ritalinic acid (alpha-phenyl-2-piperidine acetic acid) were determined as their N-trifluoroacetyl derivatives with a gas chromatograph equipped with a nitrogen phosphorous detector. The lower limit of detection was less than 1ng/ml. Application of this sensitive procedure for quantitative estimation of the drug in human plasma is demonstrated. Methylphenidate is a psychostimulant which is widely used in medicating behaviorally disordered children. 12 references. (Author abstract modified)

001916 Jindal, Satya P.; Vestergaard, Per. Rockland Research Institute, Orangeburg, NY 10962 **Quantitation of cocaine and its principal metabolite, benzoylecgonine, by GLC-mass spectrometry using stable isotope labeled analogs as internal standards.** Journal of Pharmaceutical Sciences. 67(6):811-814, 1978.

A quantitative gas/liquid chromatographic (GLC) and mass spectrometric assay was developed for the determination of cocaine and its principal metabolite, benzoylecgonine, in human urine. The assay uses selective ion focusing to monitor in a GLC effluent the molecular ions of cocaine and benzoylecgonine generated by electron impact ionization. Cocaine-d3 and benzoylecgonine-d3 are the internal standards. The assay can measure 2ng cocaine/ml and 5ng benzoylecgonine/ml with about 5% precision. The curves relating the amounts of cocaine and benzoylecgonine added, versus the amounts found over a large range of cocaine and benzoylecgonine concentrations, are straight lines with nearly zero intercepts and slopes of 0.98 and 0.97, respectively. The method has been used for the analysis of urinary cocaine and benzoylecgonine in cocaine addicts. Assay specificity was confirmed by complete identity of the mass spectra of cocaine and benzoylecgonine with those of authentic materials. 24 references. (Author abstract)

001917 Lai, Allen A.; Levy, Rene H.; Cutler, Ralph E. Clinical Research Department, Medical Division, Burroughs Wellcome & Co., Research Triangle Park, NC 27709 **Time-course of interaction between carbamazepine and clonazepam in normal man.** Clinical Pharmacology and Therapeutics. 24(3):316-323, 1978.

The applicability of a pharmacokinetic model for drug interactions by enzyme induction was tested by a chronic dosing situation using carbamazepine (Tegretol) as the inducer and clonazepam (Clonopin) as the drug affected. Seven healthy subjects received one 1.0mg clonazepam tablet once a day for 29 days and one 200mg carbamazepine tablet once a day from days 8 to 29. Plasma levels of clonazepam were measured by electron capture gas liquid chromatography and those of carbamazepine and its epoxide metabolite by gas chromatographic chemical ionization mass spectrometry. Clonazepam plasma levels reached an initial steady-state by day 7 and declined to lower steady-state over 5 to 15 days after additions of carbamazepine. The decrease in clonazepam levels ranged between 19% and 37%. Autoinduction of carbamazepine metabolism was also evident. Urinary excretion of D-glucaric acid increased two to four fold following carbamazepine administration. This increase provided additional evidence that the present interaction was due to enzyme induction. Results suggest that clonazepam levels should be monitored whenever carbamazepine is added to or withdrawn from a therapeutic regimen. 27 references. (Author abstract)

001918 Petrie, William M.; Levine, Jerome. 1501 Murfreesboro Rd., Nashville, TN 37217 **The assessment of adverse drug reactions in clinical trials.** International Pharmacopsychiatry (Basel). 13(4):209-216, 1978.

The need for development and standardization of methodology for assessing adverse drug reactions (ADRs) in clinical trials is discussed. It is suggested that a systematic approach to ADR detection from preclinical work through postmarketing monitoring would more effectively protect patients from dangerous drugs, assist the clinician by providing comparison data on adverse reactions of psychotropic agents, and improve comparability of experimental results across testing centers. Methodological questions such as appropriate rating instruments and sample sizes are also considered. 21 references. (Author abstract modified)

001919 Rosseel, M. T.; Bogaert, M. G.; Claeys, M. J. F. & C. Heymans Institute of Pharmacology, University of Ghent, De Pintelaan 135, B-9000 Ghent, Belgium **Quantitative GLC determination of cis- and trans-isomers of doxepin and desmethyldoxepin.** Journal of Pharmaceutical Sciences. 67(6):802-805, 1978.

A gas/liquid chromatographic method for the simultaneous quantitative determination of the cis and trans isomers of doxepin and desmethyldoxepin in human plasma was developed. The method involves the use of a capillary column for efficient sepa-

ration of the four compounds and the internal standards, amitriptyline and nortriptyline. A high degree of sensitivity is obtained with a nitrogen detector, enabling quantitation of the compounds in plasma of humans treated chronically with doxepin. Confirmation of the identity of the isomers in biological samples was accomplished with selected ion monitoring. 5 references. (Author abstract)

17 MISCELLANEOUS

001920 Ayd, Frank J., Jr. no address **Depot fluphenazines: 12 years' experience.** Baltimore, Ayd Medical Communications, 1978.

A collection of 11 papers, from a symposium held in August 1977, concerning the use of depot fluphenazines in psychiatric practice, is presented. Topics discussed include: clinical response and plasma levels of fluphenazine, comparison of long-acting depot neuroleptics with short-acting oral preparations, safety of high dose depot fluphenazine, and the use of depot neuroleptics in nonschizophrenic, long-term alcoholic patients. It is concluded that long-acting depot fluphenazines are most useful for patients with schizophrenia who have florid symptoms, reasonably intact affective responsiveness, and who are unreliable consumers of oral medications or poor responders to oral neuroleptics.

001921 Ban, Thomas A. no address **Psychopharmacology of thiothixene.** New York, Raven Press, 1978. 236 p. $12.50.

The psychopharmacology of the antipsychotic drug thiothixene is examined in depth. In addition to elucidating general psychopharmacologic concepts and dynamics, the history, synthesis, literature, metabolism, biochemistry, physiology, conditioning, pharmacology, uses, treatment, and toxicology of the drug are covered. A bibliography is also included.

001922 Ban, Thomas A. Tennessee Neuropsychiatric Institute, 1501 Murfreesboro Road, Nashville, TN 37217 **Psychopharmacology and psychosomatic disorders.** Psychosomatics. 19(12):757-760, 1978.

The psychopharmacology of the treatment of psychosomatic disorders in patients receiving pharmacologic agents for common somatic conditions is described. Consultation liaison psychiatrists must often prescribe anxiolytic sedatives, antidepressants, and neuroleptic drugs, which are additions to the pharmacologic agents required to treat patients with common somatic conditions. Treatment of the following conditions is discussed: cardiovascular disorders, pulmonary disease, gastrointestinal disorders, hepatic and renal insufficiency, gynecologic problems, and dermatologic disease. 29 references. (Author abstract modified)

001923 Barrett, J. M. Unit 4, 33 Wairakei St., Green Lane, Auckland, New Zealand **Drug medication and the elderly patient.** New Zealand Medical Journal (Dunedin). 88(623):360-362, 1978.

Medication use and error was investigated among the elderly. A survey of the medicine cupboards of 53 elderly people ranging from 60 to 89 years old in three communities of pensioners flats in Dunedin revealed that 90% of the 48 respondents on prescription drugs made medication errors. Each respondent took an average of four drugs, and each made an average of 2.5medication errors. It was observed that 45% of the respondents were currently taking psychotropic drugs on a long-term basis. 11 references. (Author abstract modified)

001924 Bernstein, Jerrold G. no address **Clinical Psychopharmacology.** Littleton, MA, PSG Publishing, 1978. 154 p. $20.00.

A compilation of papers on psychopharmacology is presented. Among the topics discussed are: the organic basis of mental illness, the biochemical basis of antianxiety drugs, insomnia and its treatment by hypnotics, the chemotherapy of psychosis, neuroleptic medications and their side-effects, psychopharmacological treatment of depression, atypical bipolar illness, the pharmacological treatment of childhood mental disorders, the management of drug abuse, and the medical effects of psychotropic drugs.

001925 Bowden, Charles L.; Giffen, Martin B. University of Texas Health Science Center, San Antonio, TX **Cost of psychotropic drugs.** Behavioral Medicine. 5(9):32-34, 1978.

Cost considerations in prescribing psychotropic drugs are examined. Expensive medications can significantly influence compliance with prescribed regimens and can, consequently, significantly influence the associated costs of medical care. A variety of factors affect the costs of psychotropic medications: practice setting, dosage sizes, manufacturer, and retail supplier. Cost alone should however not be the major consideration in selecting a medication. Prescribing once daily dose and use of the largest unit size is generally feasible with psychotropic drugs and can significantly lower medication costs for any particular drug. When there is no suicide risk, prescribing large quantities can also result in savings. No advantages accrue from prescribing the spansules and other more expensive so called long-acting forms of most drugs. While brand name drugs are generally more expensive than generics, the issue is complicated in that equivalency of the active ingredient does not ensure equal effectiveness and acceptability. A table of comparative dosages, drug forms, and costs for major antipsychotics, anxiolytics, tricyclic antidepressants, and lithium carbonate is provided. 3 references.

001926 Brown, Gregory M.; Stancer, Harvey C.; Moldofsky, Harvey; Harman, Jeremy; Murphy, John T.; Gupta, Ram Nath. Department of Neurosciences, McMaster University, 1200 Main Street West, Hamilton, Ontario, Canada L85 4J9 **Withdrawal from long-term high-dose desipramine therapy.** Archives of General Psychiatry. 35(10):1261-1264, 1978.

Investigation of withdrawal was undertaken on a patient whose long-term intake of desipramine hydrochloride was amongst the highest reported. Desipramine treatment instituted at a daily dosage of 75mg for depressive equivalents of head, chest, and abdominal pain was increased to 1000mg daily over a 12 year interval with minimal side-effects. Plasma desipramine level dropped immediately on withdrawal, and urinary metabolite values dropped over the subsequent 5 days. The electrocardiographic abnormalities of first-degree atrioventricular block and incomplete left bundle branch block rapidly disappeared on cessation of medication. Electroencephalographic changes with symmetrical generalized irregular 5 to 7cps theta activity and 18 to 28cps beta activity also improved. Longitudinal polygraphic sleep studies showed prolonged rapid eye movement rebound and increased delta sleep coincident with withdrawal. It took 10 days after cessation of desipramine for urinary 3-methoxy-4-hydroxyphenylglycol concentration to increase substantially. Although catecholamines are involved in growth hormone (GH) and cotisol regulation, no abnormalities were found in GH or cortisol levels. 24 references. (Author abstract)

001927 Bunney, William E., Jr. Biological Psychiatry Branch, NIMH, Bldg. 10, 9000 Rockville Pike, Bethesda, MD 20014 **Drug therapy and psychobiological research advances in the psychoses in the past decade.** American Journal of Psychiatry. 135(Supplement):8-13, 1978.

Psychobiological research advances of the past decade in the drug therapy of psychoses are reviewed. Major advances in the area of maintenance therapy with lithium, tricyclics, and neuroleptics are described. Methods of relating plasma drug levels to clinical efficacy are credited with these advances. It is asserted

that research in genetic factors, the mode of action of pharmacological agents, and hormonal influences on psychopathology have added to theoretical understanding of the psychoses. Promising areas of investigation include: 1) the search for genetic markers; 2) studies of postsynaptic neuronal receptors; and 3) examination of the effects of polypeptides, including endogenous opioid compounds. 59 references. (Author abstract modified)

001928 Cardoni, Alex A.; Walters, J. Ken, Jr. School of Pharmacy, University of Connecticut, Farmington, CT **Methadone for pain.** Journal of the American Medical Association. 240(24):2630-2631, 1978.

In a letter to the editor, the use of orally administered methadone for the treatment of patients with severe chronic pain is advocated, and the restriction of oral methadone to methadone detoxication or maintenance programs registered by the Drug Enforcement Agency is criticized. Oral administration of methadone to terminally ill patients who require higher than usual doses or more frequent administration than usual of narcotic analgesics is often desirable. Eli Lilly and Co is encouraged to make Diskets, methadone in tablet form, available to physicians and pharmacists not associated with methadone detoxication or treatment programs so that this useful dosage form will be available for use as an analgesic.

001929 Carlsson, A.; Poirier, L. no address **Symposium 13: neurotransmitters, behavior and brain dysfunction.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 684-772).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, symposium 13 attempted to link central nervous functions and disorders to specific biochemical phenomena. Animal models of extrapyramidal disorders were described, and management of drug-induced dyskinesias was discussed. The mechanism of action of antipsychotic drugs was reviewed in reference to their effects on central monamines and cyclic nucleotides. The involvement of central monoamines, particularly 5-hydroxytryptamine, in affective disorders was also analyzed.

001930 Chien, Ching-piao. Dept. of Psychiatry, Albany Medical College of Union University, Albany, NY **/Summary of the symposium on transcultural psychopharmacology./** Summary of the symposium. Psychopharmacology Bulletin. 14(4):89-91, 1978.

In a summary of the symposium on transcultural psychopharmacology at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the field of study and methodlogical issues in transcultural psychopharmacology are discussed. The need for cultural norms in psychopharmacology which can be used in comparing the psychopharmacological responses of people in different cultures is noted. Cultural patterns in side-effects of pharmacotherapy is cited as an important area in transcultural psychopharmacology. The organization of collaborative centers for transcultural psychopharmacology is described. 17 references.

001931 Clark, William G.; del Giudice, Joseph. School of Medicine, University of California, Los Angeles, CA **Principles of psychopharmacology.** 2nd ed. New York, Academic Press, 1978. 976 p. $27.50.

Advances in psychopharmacology are presented. Chapters discuss: history, aims, and achievements of psychopharmacology; ethnopharmacological significance of psychotropic drugs of vegetal origin; transmitter based mapping of central neurons; biochemistry of affective disorders and schizophrenia; psychotropic drugs; pharmacological and physiological bases of psychopharmacology; genetic and environmental aspects of drugs and behavior; psychopharmacologic drug designs and research problems with humans; toxicology and adverse side-effects of psychotropic drugs and their management; psychopharmacotherapy; pediatric psychopharmacology; psychopharmacological drugs in the aged; general medical use of psychotropic drugs; and drug and alcohol abuse. An international annotated bibliography is provided. A list of international teaching and training references in basic and clinical psychopharmacology is appended.

001932 Colpaert, Francis C. Dept. of Pharmacology, Janssen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **Discriminative stimulus properties of narcotic analgesic drugs.** Pharmacology Biochemistry and Behavior. 9(6):863-887, 1978.

The experimental literature on the discriminative stimulus properties of narcotic analgesic drugs is reviewed. Evidence that narcotics can act as a discriminative stimulus, and that this narcotic cue is an exclusive, complexly composed, and centrally originating property of narcotics is discussed. The comparative data so far available are consistent with the assumption that the narcotic cue in laboratory animals relates initmately to, and can serve as a preclinical model for opiate like subjective effects in man. Other topics discussed include: the involvement of various neurotransmitter substances in the narcotic cue, the role of training drug dose, the tolerance problem, the relation between the narcotic cue and the analogesic activity of narcotics the involvement of neuropeptides, drug cue conditioning to environmental stimuli, drug cues and drug states, and the internal discriminative stimulus control of behavior by endogenous opioid substances. 159 references. (Author abstract modified)

001933 Cooper, Jack R.; Bloom, Floyd E.; Roth, Robert H. no address **The biochemical basis of neuropharmacology.** 3rd ed., New York, Oxford University Press, 1978. 327 p. $13.95.

Biological bases of neuropharmacological effects, including neuroactive peptides, receptors, drug-receptor interactions, the involvement of endorphins in analgesia, mental disorders, drug addiction, and hormone releasing factors are discussed. Conceptual and methodological issues in research suggesting peptides as possible transmitters or modulators in the nervous system are critically examined.

001934 Cooper, Joel; Zanna, Mark P.; Taves, Peter A. Department of Psychology, Princeton University, Princeton, NJ 08540 **Arousal as a necessary condition for attitude change following induced compliance.** Journal of Personality and Social Psychology. 36(10):1101-1106, 1978.

The role of arousal in attitude change in the induced compliance paradigm was examined in 63 subjects who were induced to write couterattitudinal essays under high or low choice conditions. All subjects were led to believe that a pill they were given in the context of a separate experiment was a placebo. In fact, subjects were administered phenobarbital, amphetamine, or placebo. In this last condition, results yielded the usual dissonance effect: high choice produced more attitude change in the direction of the essay than low choice. This effect was virtually eliminated in subjects given phenobarbital. For subjects who were given amphetamine, attitude change increased under choice, and was exhibited for the first time under low choice. Results are consistent with the notion that attitude change is in the service of reducing arousal and with the idea that arousal from other sources can be misattributed to attitude discrepant behavior. 17 references. (Author abstract modified)

001935 Costa, E. no address **Symposium 10: putative neurotransmitters and neuromodulators other than aromatic amines: their**

role in neuropharmacology. In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 435-495).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, symposium 10 focused on putative neurotransmitters and neuromodulators other than aromatic amines. The distribution and activity of gamma-aminobutyric acid (GABA), endorphins, substance-P, enkephalin, and thyrotropin releasing hormone were discussed. The significance of sodium dependent high affinity chlorine uptake was described. The pharmacological implications of dopaminergic, cholinergic, and GABA mediated neurons in the action of antipsychotics and narcotic analgesics were also considered.

001936 Craig, Thomas J.; Van Natta, Pearl A. 40 Woodbine Rd., New York NY 10956 **Current medication use and symptoms of depression in a general population.** American Journal of Psychiatry. 135(9):1036-1039, 1978.

The relationship between use of both prescribed and unprescribed medications and depression was investigated. It was found that 41.8% of 771 men and 60.2% of 1,059 women reported having used one or more medications in the 48 hours prior to the interview. The use of medication and the number of medications used increased progressively with age among both men and women. Respondents who used four or more medications included significantly more high scorers on a depression checklist than those who used fewer medications. The group of women who used minor tranquilizers and sedatives included significantly more high depression scores than those who did not. It is found that among both sexes, those scoring in the depressed range, who are receiving psychotropic medications, still tend to take minor tranquilizers or sedatives, in addition to the prescription drugs. 28 references. (Author abstract modified)

001937 Davis, C. Middlewood Hospital, Sheffield, England **Project lithium.** Nursing Times (London). 74(44):1802-1804, 1978.

Following a review of the history, biochemistry, toxicity, and pharmacology of lithium, the formulation of a soluble lithium preparation is described. Lithium has been used in the treatment of psychiatric disorders, particularly in the treatment of mania and manic-depressive psychosis, for the past 80 years. Lithium is readily absorbed from the gastrointestinal tract when taken orally, and appears to inhibit various enzyme systems and displaces sodium from the body fluid. Severity of lithium intoxication is related to the degree of lithium accumulation in the body. While lithium is usually prescribed in tablet form, this has been found difficult to administer for some patients. Consequently, experiments were undertaken to formulate a soluble preparation utilizing lithium tablets. A solution of lithium citrate was finally devised which could be concealed in coffee, tea, or fruit juice with only a slightly different taste. 15 references.

001938 Demers-Desrosiers, L. A.; Nestoros, J. N.; Vaillancourt, P. Montreal Neurological Hospital and Institute, 3801 University St., Montreal, Quebec, Canada H3A 2B4 **Acute psychosis precipitated by withdrawal of anticonvulsant medication.** American Journal of Psychiatry. 135(8):981-982, 1978.

Two cases of epileptics who became psychotic immediately after withdrawal from anticonvulsive medication and recovered completely following restitution of the medication are described. The psychoses occurred in the context of clear sensoria and were accompanied by markedly increased EEG abnormalities. These cases may be of theoretical importance because they represent the antipode to forced normalization of the EEG which has been proposed as the etiologic factor in a number of psychoses occurring in epileptic patients. It is suggested that drastic changes, regardless of whether they represent improvement or deterioration in the neurophysiological dynamic equilibrium represented by the EEG, brought about by either prescribing or withdrawing anticonvulsive drugs may be etiologically involved in a number of psychoses in epileptic patients. 1 reference.

001939 Deniker, P. no address **Symposium 5: a critical study on psychostimulant drugs.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 201-240).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, symposium 5 was concerned with psychostimulant drugs, defined as drugs that stimulate mental or behavioral acitivity. Drugs discussed include parachloromethylamphetamine, pyrovalerone, pemolyne, mefexamide, meclofenoxate, demanol, piracetam, pyrithioxine, ergot alkaloids, vincamine, pyribedil, naftydrofuryl, carpipramine, and other mood stimulants, antidepressants, and amphetamine derivatives. Problems in screening for psychostimulant activities are discussed, and the need for standardized methods in testing psychostimulants is emphasized. (Author abstract modified)

001940 Di Bari, Michelina; Bertoletti, Paolo. Ospedale civile ""S. Maria del Prato" di Feltre, Italy /**A note on the difficulty of introducting new antidepressant drugs in ambulatory psychiatric practice.**/ Nota sulla difficolta di introduzione di nuovi farmaci antidepressivi nella pratica psichiatrica ambulatoriale. Clinical Psichiatrica (Roma). 14(23);13-19, 1978.

Difficulties concerning the introduction of new antidepressant drugs on an outpatient basis are discussed, with emphasis placed on sociological and psychological considerations. It is noted that the present phase is already postpharmacological. After a phase of great euphoria tied to the notable successes achieved, there was a phase of partial stagnation, of the lack of new ideas, which the industries tried to remedy with the introduction of new antidepressant substances. Al least four new substances appeared in Italy in 1978 whose antidepressant characteristics demonstrate absolutely nothing new or different from widely known and utilized durgs. 4 references. (Journal abstract modified)

001941 Dorsey, Richard. 7913 Euclid Ave., Cincinnati, OH 45243 **The American Psychiatric Association and the Food and Drug Administration: an analysis and proposal for action.** American Journal of Psychiatry. 135(9):1049-1056, 1978.

The implications of the proposed governmental regulation of the prescription of medication are discussed. It is asserted that the Drug Regulation Reform Act of 1978, if passed in its present form, would grant FDA broad new powers over patient care and clinical research. In order to retain a high degree of control of its future and activities, the American Psychiatric Association (APA) must develop an effective mechanism for meeting this challenge and for serving the interests of its members and their patients. Proposals for APA policy are enumerated. 24 references. (Author abstract modified)

001942 Dvorchik, Barry H.; Vesell, Elliot S. Department of Pharmacology, Pennsylvania State University College of Medicine, Hershey, PA 17033 **Significance of error associated with use of the one-compartment formula to calculate clearance of thirty-eight drugs.** Clinical Pharmacology and Therapeutics. 23(6):617-623, 1978.

A literature survey was performed to gather information on the magnitude of error introduced into calculating drug clearance by using a one-compartment formula for drugs whose disposition follows multicompartment kinetics. Antipyrine, amobarbital, chlordiazepoxide, nortriptyline, pentobarbital, phenytoin,

sulfisoxazole, theophylline, tolbutamide, and warfarin had errors of 8% or less, thereby permitting use of the one compartment formula for determination of drug clearances without much loss of accuracy. However, 22 drugs exhibited errors ranging from 12-196%; for these drugs, the one compartment formula introduced considerable inaccuracy. The errors for diazepam, meperidine, and propranolol, when administered to patients with hepatic cirrhosis or to hypertensive patients were 4, 5, and 6%, respectively, but in normal subjects the errors were 18, 14, and 21%. Thus, the clinical status of the subject may influence the choice of the model used. It is concluded that for many commonly used drugs, the one compartment formula is acceptable for determining clearance, loading dose, or maintenance dose. 41 references. (Author abstract modified)

001943 Feldman, Walter S. Center for Psychiatric and Psychological Services, 628 West 14th Street, Chicago Heights, IL 60411 **Is informed consent possible in psychiatry?** Legal Aspects of Medical Practice. 6(7):29-31, 1978.

The legal and moral difficulties in obtaining valid informed consent for the use of antipsychotic drugs from a patient with a serious psychiatric illness are described. Legally, the courts have assumed that there are techniques for an accurate evaluation of informed consent, although studies have demonstrated that few patients can comprehend to complexities of the data that must be assimilated for a valid choice. On a moral basis, tardive dyskinesia symptoms may worsen if antipsychotic medication is increased; however, without the medication, some patients may relapse into psychosis. A discussion of the issues involved concludes with the argument that the courts should clearly state that the physician has the knowledge to best weigh the benefits versus the risks in regard to the administration of antipsychotic medication to the mentally incompetent individual.

001944 Freyhan, F.A.; Ban, T.A. no address **Symposium 4: training models in psychopharmacology.** In: Deniker, P., Neuropsychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 155-199).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, symposium 4 was concerned with training models in psychopharmacology. The role of the World Health Organization in teaching psychopharmacology is discussed, and recommendations for training courses in developing countries are made. A pharmacologist's view of training in psychopharmacology is presented, followed by a psychiatrist's view of the problem. Specific needs for pharmacology courses for premedical students, medical students, teachers in medical schools, and graduate students in pharmacology are outlined. The need to establish clear communication among various disciplines and between family doctors, psychiatrists, and pharmacologists is emphasized. (Author abstract modified)

001945 Garattini, S. no address **Symposium 15: metabolism and kinetics of psychotropic drugs.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 825-888).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, symposium 15 was concerned with the metabolism and kinetics of psychotropic drugs. The brain distribution and pharmacokinetics of psychotropic drugs were discussed, with special attention to desipramine and substituted benzamide sulpirides. The clinical significance of measuring plasma levels of phenothiazines, benzodiazepines, and antidepressants was considered.

001946 Garcin, F. no address **Plenary session 2: ten CINP congresses. Retrospective and prospective.** In: Deniker, P., Neuropsychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1005-1055).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum (CINP), held in Quebec, July 1976, the purpose of the second plenary session was to trace the historical development of various areas of psychopharmacology over the 20 year period covered by 10 CINP congresses. The current status of these areas was assessed and speculations about future developments were made. Specific areas addressed include: psychopharmacology research, clinical pharmacology and pharmacotherapy, drug evaluation, and alcohol and drug related problems. (Author abstract modified)

001947 Gawin, Frank H. Room M 105, School of Medicine, Stanford University Medical Center, Stanford, CA 94305 **Pharmacologic enhancement of the erotic: implications of an expanded definition of aphrodisiacs.** Journal of Sex Research. 14(2):107-117, 1978.

An expanded definition of aphrodisiacs is presented which includes an enhanced subjective pleasure of sexual experience; and using this difinition, the potential aphrodisiac effects of a variety of pharmacologic agents are examined. While previous research indicates that there are no true aphrodisiacs, that is, pharmacologic substances which enhance sex drive or directly increase sexual frequency or other sexual performance variables, research and anecdotal accounts suggest that such substances as marijuana, cocaine and the amphetamines, the hallucinogens (LSD, psilocybin, mescaline), and methylenedioxyamphetamine have the potential for enhancing subjectively experienced sexual pleasure. These substances are examined within the expanded definition and positive potentials for research on sex and drug interactions are discussed. 30 references. (Author abstract modified)

001948 Goldberg, S. G.; Pichot, P. no address **Symposium 2: parameters and methods in the measurement of therapeutic response.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 83-115).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the second symposium considered new developments in the measurement of therapeutic response. New statistical and computer techniques for measuring psychopathological changes are described, and problems with psychiatric rating scales of the severity of disturbances are discussed. The prevention and treatment of depression in general practice, a criterion refined measure of depressed mood, and the effect of drug treatment on interpersonal styles of manic patients are also discussed.

001949 Gorelick, David A.; Kussin, Steven Z.; **Kahm, Ivan.** Department of Psychiatry, University of California, Neuropsychiatric Institute, 760 Westwood Plaza, Los Angeles, CA 90024 **Paranoid delusions and auditory hallucinations associated with digoxin intoxication.** Journal of Nervous and Mental Disease. 166(11):817-819, 1978.

A case report of an 83-year-old woman who developed paranoid delusions and auditory hallucinations in association with toxic serum levels of digoxin, while remaining alert, unagitated, and coherent in thinking, is presented. No cardiovascular metabolic abnormatlities were discovered to account for her psychiatric symptoms. Her mental status rapidly returned to normal as serum digoxin declined to therapeutic levels. 8 references. (Author abstract modified)

001950 Greenblatt, David J.; Woo, Elaine; Allen, Marcia Divoll; Orsulak, Paul J.; Shader, Richard I. Clinical Parmaco-

logy Unit, Massachusetts General Hospital, Boston, MA 02114 **Rapid recovery from massive diazepam overdose.** Journal of the American Medical Association. 240(17):1872-1874, 1978.

The rapid course of recovery following massive overdose of diazepam is examined in case studies of two patients who were hospitalized in moderately deep coma after ingesting relatively large doses of diazepam (500 and 2000mg) with suicidal intent. Neither patient experienced important complications; both recovered fully and were discharged within 48 hours. Concentrations of diazepam and its three pharmacologically active metabolites were determined in multiple samples drawn during and after hospitalization. High concentrations of all four compounds were present in early samples, declining slowly during the next 1 to 2 weeks. Results indicate that rapid clinical recovery after diazepam overdose is not attributable to rapid elimination of active compounds, but more likely to adaptation or tolerance to their depressant effects. 12 references. (Author abstract modified)

001951 Greist, John H.; Jefferson, James W.; Marcetich, James. University of Wisconsin Center for Health Sciences, Madison, WI **Lithium and the primary care physician.** Behavioral Medicine. 5(12):25-26, 28-31, 1978.

An overview of lithium therapy is presented for the primary care physician. In general, the approved uses for lithium are in the treatment of acute mania and for prophylaxis against recurrence of mania. Although lithium has been used in the treatment of depression alone or in combination with tricyclics or monoamine oxidase inhibitors, this use and others (such as treatment of aggression, schizoaffective disorders, alcoholism, etc.)are still controversial. Lithium is effective in about 80% of manic patients; interpatient variability and phase of illness must be considered when determining dosage. Care must be taken in prescribing lithium for pregnant patients or those with renal or cardiac disease. Side-effects are usually benign and well tolerated. Additional side-effects are examined and their management discussed. Interactions between lithium and the following drugs are briefly noted: haloperidol, thioridazine, chlorpromazine, antidepressants, anxiolytics, diuretics, muscle relaxants, antithyroid drugs, antibiotics and antinflammatory drugs, antihypertensives, and alcohol. Lithium intoxication and its management is also considered. 3 references.

001952 Hall, Richard C. W.; LeCann, Auguste F.; Schoolar, Joseph C. Dept. of Psychiatry, University of Texas Medical School, 6400 West Cullen, Houston, TX 77025 **Amobarbital treatment of multiple personality: use of structured video tape interviews as a basis for intensive psychotherapy.** Journal of Nervous and Mental Disease. 166(9):666-670, 1978.

The case of a 30-year-old woman with five distinct personalities who was treated using a system of structured video taped sodium amobarbital interviews, in which areas to be explored were developed in psychotherapy, is presented. In the course of treatment, the patient's personalities fused and she was able to accept each component as a part of herself. The therapy technique minimized dependency, and the possibility of addiction to amobarbital interviews permitted more active patient therapy involvement, and set clear cut goals and expectations for improvement before further amobarbital interviews could be conducted. 12 references. (Author abstract modified)

001953 Harry, T. V. A.; Fox, Richard. Wyeth Laboratories, Taplow, Maidenhead, Berks SL6 OPH, England **Abuse of benzodiazepines.** Lancet (London). 2(8098):1045, 1978.

In an exchange of letters, Harry and Fox discuss the addictive potential of benzodiazepines, and the advisability of prescribing psychoactive drugs to recovered alcoholics. It is contended that almost any psychotropic medication, antidepressant or otherwise, may precipitate an alcohol relapse in susceptible patients. This issue of whether or not lorazepam has been found to be rapidly effective in the treatment of the alcoholic patient is discussed. 1 reference.

001954 Hoffmeister, F.; Denber, H. C. B. no address **Symposium 6: treatment of drug dependence: problems and perspectives.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 241-295).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, symposium 6 was concerned with the treatment of drug dependence. Pharmacotherapeutic aspects of the clinical management of drug dependence and rapid drug detoxification are discussed, and methodological aspects of behavior therapies in the treatment of drug dependence are considered. The use of acupuncture in narcotic withdrawal in heroin addicts, experimental auricular electroacupuncture in morphine dependent rats, and the effectiveness of butyrophenones and related drugs in narcotic withdrawal are reviewed.

001955 Hollister, Leo E. School of Medicine, Stanford University, Palo Alto, CA 94305 **Mental disorders in the elderly.** Drug Therapy. 7:128-135, 1977.

The identification and treatment of underlying physical or neurological problems, drug-induced disorders, and functional psychiatric disorders in the differential diagnosis of psychosis in the elderly is briefly described. Senile brain disease, the most common cause of organic brain syndrome in the elderly, is characterized initially by impaired recent memory and decreased mental alertness followed by hostility, paranoia, or depression accompanied by poor self-care, decreased appetite and sleep reversal. Functional disorders such as depression may show manifestations similar to brain syndrome but they are treatable. Stimulants and analeptics show little evidence of efficacy in treating functional disorders in the elderly. Anticoagulant therapy and antidepressant medications are either limited in effectiveness or not without risks. However, effective symptomatic treatment has occurred with judicious use of such antipsychotic drugs as thioridazine. It is too early to evaluate the potential for the elderly of drugs that may alter disturbed brain metabolism.

001956 Hong, J. S.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, St. Elizabeths Hospital, Washington, DC **Participation of substance P in the action of haloperidol.** Psychopharmacology Bulletin. 14(4):23-24, 1978.

In a paper presented at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the participation of substance-P (SP) in the action of haloperidol is discussed. The effects of chronic administration of haloperidol and other neuroleptics on the concentration of SP in substantia nigra were studied in male Sprague-Dawley rats. Results demonstrate a specific decrease of nigral SP content following a protracted treatment with haloperidol. It is suggested that this descrease participates in the tolerance to the extrapyramidal effects of classical neuroleptics. 14 references.

001957 Jacobowitz, D. M. Laboratory of Clinical Science, Section on Histopharmacology, NIMH, Bethesda, MD 20014 **Histochemical and micropunch analysis of aminergic and cholinergic pathways.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 503-515).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the localization of brain catecholaminergic and cholinergic axonal path-

ways were plotted on transverse sections of a stereotaxic atlas. Two distinct major bundles, the dorsal and ventral pathways, were described. Data were obtained by histochemical and micropunch analysis in rats. 35 references. (Author abstract modified)

001958 Janowsky, David S.; Davis, John M.; Huey, Leighton; Judd, Lewis L. Dept. of Psychiatry, University of California at San Diego, La Jolla, CA 92037 **Methylphenidate and physostigmine as diagnostic tools.** Psychopharmacology Bulletin. 14(4):83-85, 1978.

In a paper presented at the session on biological and behavioral prediction of psychopharmacological treatment response, at the 16th annual meeting of the American College of Neuropsychopharmacology, held in San Juan, PR, December 1977, the use of methylphenidate and physostigmine as diagnostic tools is described. The use of methylphenidate interviews to assist in diagnosis and in deciding on pharmacotherapy is discussed. It is hypothesized that those patients whose psychotic conditions worsen following methylphenidate administration may be antipsychotic drug responders. The use of physostigmine in diagnosing symptomatic affective disorder patients is noted. 7 references.

001959 Jun, H. W.; Ruenitz, P. C. Department of Pharmacy, School of Pharmacy, University of Georgia, Athens, GA 30602 **Interaction of tricyclic antipsychotic and antidepressant drugs with 1-anilino-8-naphthalenesulfonic acid.** Journal of Pharmaceutical Sciences. 67(6):861-863, 1978.

The binding of 1-anilo-9-naphthalenesulfonic acid to selected tricyclic antipsychotic and antidepressant drugs was studied by fluorescence spectroscopy. The acid exhibited an increase in fluorescence intensity accompanied by a hypsochromic shift of the emission maxima in the presence of these drugs. These fluorescence characteristics, in addition to those of acid/drug complexes after the addition of potassium chloride or urea, suggest that the binding is hydrophobic. The spectra also provide evidence of the importance of certain structural features of drugs in determining the nature of binding. 14 references. (Author abstract)

001960 Kalman, Thomas; Warner, Gloria Marmar. Cornell University Medical College, New York, NY **Protracted vomiting following abrupt cessation of psychotropics: a case report.** Canadian Psychiatric Association Journal (Ottawa). 23(3):163-165, 1978.

A case report of a 23-year-old patient treated with haloperidol, imipramine, and benztropine mesylate for schizophrenia and suicidal ideation is presented to illustrate an unusually severe reaction to the abrupt cessation of neuroleptic medication. In addition to the description of the withdrawal reaction, a possible explanation of the chemical phenomenon is offered. 9 references. (Author abstract modified)

001961 Karczmar, A. G. no address **Symposium 11: interrelationships between various neurotransmitter systems.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 497-623).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, symposium 11 was concerned with interrelationships between various neurotransmitter systems. Multitransmitter involvement in behavior and in drug action was discussed, with emphasis on the influence of neuronal structuralization or circuitry on the functional outcome of transmitter interactions. Multitransmitter mechanisms underlying appetitive behavior, thermoregulation, aggression, learning, sexual behavior, affective disease, and the sleep/waking cycle were discussed in detail.

001962 Kopin, I. J. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **The role of calcium in neurosecretion.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 357-361).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the role of calcium in neurosecretion was discussed. Although it is widely accepted that calcium ions are intimately involved in exocytosis, the exact role of the ions in the secretory process is not yet clear. Some drugs that block release of neurotransmitters may do so by interfering with calcium entry into the nerve ending or preventing the action of calcium in initiating exocytosis. Acetylcholine, brethylium, and lithium are useful experimental tools in elucidating the role of calcium in the normal secretory process of neurotransmitters. 30 references.

001963 Krucko, Jan. Kantonale Psychiatrische Klinik, CH-9500 Wil/St. Gallen, Switzerland **/Social psychiatric reasons for psychotic patients not taking their prescribed drugs and suffering relapse./** Sozialpsychiatrische Grunde der Nichteinnahme verordneter Medikamente und der Ruckfalligkeit bei psychotischen Patienten. International Pharmacopsychiatry (Basel). 13(4):234-249, 1978.

Factors that determine whether patients return for regular check ups and take their prescribed medication were assessed in 104 psychotic patients, primarily schizophrenics. Women were more amenable to followup than men. Regular followup depended largely on the degree of integration within the family; well integrated patients attended more regularly. Social work measures improved patient compliance only when they were carried out on a regular basis. Patients affected before age 25 attended check ups less regularly than those who fell ill when they were older. Regularity of attendance for check ups tended to diminish with the increasing number of hospital admissions in the patient's history. No significant difference was found with respect to educational level, but patients with a moderate level of education tended to return for check ups more regularly than those with above or below average levels of education. 21 references. (Journal abstract modified)

001964 Lesse, Stanley. 114 E. 78th St., New York, NY 10021 **Psychotherapy in combination with tranquilizers and antidepressant drugs.** Indian Journal of Psychiatry (Poona). 20(2):120-131, 1978.

Experience with specially designed psychotherapeutic procedures in combination with tranquilizing drugs and antidepressants is summarized. The procedures are recommended as being valuable on an outpatient basis in the management of very anxious, neurotic and psychotic individuals, who otherwise, might require hospitalization, as well as for severely depressed, and even suicidal individuals. Some form of psychotherapy is always administered with drug therapy, and the question is whether the psychotherapy is intentional or unintentional. It is maintained that therapy should always be intentional and specifically designed in keeping with the rapid changes that are possibly secondary to the administration of psychotropic drugs. Specific suggestions for psychotherapeutic design at various points in the treatment procedure are outlined. 12 references. (Author abstract modified)

001965 Marks, John. University of Cambridge, Cambridge, England **The benzodiazepines: use, overuse, misuse, abuse.** Lancaster, England, M. T. P., 1978. 111 p. $4.95.

The evidence for dependence in the use of the benzodiazepines (including chlordiazepoxide diazepam, and nitrazepam) is reviewed. It is concluded that physical dependence can be produced in man by giving high doses for long periods. The absti-

nence syndrome is of the alcohol/barbiturate type; it comes on late (after 3 to 6 days), is less severe, and lasts a shorter time; symptoms of the mild form of the syndrome are difficult to distinguish from those of the anxiety state for which the drug was given in the first place. The benzodiazepine drugs figure in drug abuse circles mainly because they are readily available and sedative.

001966 Matsumoto, Halina. Klinika Psychiatryczna, Nowowiejska 27, Warsaw, Poland **/Studies of monoamine oxidase (MAO) and their significance for the psychiatric clinic./** Badania nad monoaminooksydaza (MAO) i ich znaczenie dla kliniki psychiatrycznej. Psychiatria Polska (Gdansk). 12(3):419-428, 1978.

Studies on monoamine oxidase (MAO) are reviewed, with emphasis on findings involving mental patients. The structure and function of this enzyme are described, and its heterogeneity is examined. Physiologic control of MAO and the biochemical consequences of MAO inhibition also are discussed. Tables show MAO platelet activity in schizophrenics and control subjects (studied with regard to C14-tryptamine), and MAO platelet activity in patients with endogenous depression as compared with control subjects. The effects of amitriptyline, imipramine, lithium salts, reserpine, amphetamine, and other medications on enzyme activity also are considered. 74 references.

001967 Mendlewicz, J. no address **Symposium 14: genetic psychopharmacology.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 773-823).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, symposium 14 was concerned with the role of genetic factors in determining drug metabolism and drug response. Pharmacogenetic studies of the effects of morphine and alcohol in mice were presented. An investigation of the significance of genetic factors in lithium treatment in manic-depressive illness was also described.

001968 Morel-Maroger, A. Centre Hospitalier de Corbeil-Essone, F-91100 Corbeil-Essonne, France **/Positive effects of L-Dopa on marginal symptoms observed in parkinsonians./** Effets positifs de la L-Dopa sur une symptomatologie ""marginale" observee chez les parkinsoniens. L'Encephale (Paris). 4(3):223-231, 1978.

Psychiatric and neurologic aspects of L-Dopa treatment were investigated in patients with Parkinson's disease. A symptomatology not detected by the classic rating scales and sensitive to L-Dopa therapy was found which could be divided into two categories. The first is a rare symptomatology whose development has received little study but whose characteristics are recognized in the literature on parkinsonism. The symptoms include oculomotor and sensory difficulties, syncinesias, and reflex anomalies. The second category involves prehensile, or grasping behavior, and disturbances in gesturing maneuvers. In these patients, the positive effects of L-Dopa are in total contrast to results observed in patients with frontal cortex lesions and without extrapyramidal symptoms. These findings contribute to a better understanding of dopaminergic pathway typology and of the role of cortical and subcortical structures in the programming of movement. 41 references. (Journal abstract modified)

001969 Motylova, A.; Molcan, J.; Chalabala, M. 884 21 Bratislava, Mickiewiczova 13, Czechoslovakia **/On the pharmacokinetics of a new medicinal form of lithium with prolonged effect./** K farmakokinetike novej aplikacnej formy litia s protrahovanym ucinkom. Ceskoslovenska Psychiatrie (Praha). 74(3):133-138, 1978.

A new form of lithium with protracted action was tested in five patients ranging in age from 28-to-60-years-old. The differences were observed in lithemia during 24 hours after a one time application of 1000mg of slow release lithium carbonate in comparison with the changes in level of lithium in the serum after a one time application of lithium carbonate in the standard administration form of the same daily dosage. Results show that the slow release preparation keeps the level of lithium more stable over the 24 hour period than does the standard preparation. 7 references. (Author abstract modified)

001970 Murray, John B. Psychology Department, St. John's University, Jamaica, NY 11432 **Psychologists and psychoactive drugs.** Genetic Psychology Monographs. 98(Second Half):281-323, 1978.

Research on psychoactive drugs including antianxiety drugs, antidepressant drugs, and antipsychotic drugs are reviewed. The drug families and their usual side-effects are described. The success of tricyclic antidepressants in alleviating symptoms of depression are cited. However, proliferation of drug use, polypharmacy, and tardive dyskinesia are seen as areas of concern. It is concluded that future research will concentrate on advances in biological explanations of schizophrenia and manic depressive disorders, and expanding knowledge about the brain's neurotransmitters. 270 references. (Author abstract modified)

001971 Murray, Robin M.; Murphy, Dennis L. Maudsley Hospital, Denmark Hill, London SE5 8AZ, England **Drug response and psychiatric nosology.** Psychological Medicine (London). 8(4):667-681, 1978.

The relationship between pharmacological response and psychiatric nosology, and research concerning the successful use of drug response nosological models in somatic medicine are discussed. Only bipolar depressives and several other minor patient subgroups manifest consistent drug responses in association with characteristic psychobiological features. The presence of multiple intervening variables, such as individual differences in drug metabolism, drug taking behavior, and biological sensitivity to drugs may mitigate against the reliable identification of clinically distinguishable drug responding subgroups. Furthermore, the majority of available psychoactive drugs have either multiple or broad spectrum effects inconsistent with hypotheses utilizing the mechanism or site of drug action to argue for a diagnosis specific biological disorder at such sites. 176 references. (Author abstract modified)

001972 Nissen, G. Humboldt-Krankenhaus, Frohnauer Strasse 74-80, D-1000 Berlin 28, Germany **/Possible therapies for behavior disorders in children./** Behandlungsmoglichkeiten kindlicher Verhaltensstorungen. Medizinische Welt (Stuttgart). 29(35):1358-1361, 1978.

Important therapies in child and adolescent psychiatry are reviewed. The therapeutic possibilities for behavior disorders in children have improved significantly in the last decades. This is partly due to an enlarged therapeutic repertoire and partly to a more refined diagnostic procedure. In the overview of possible therapies special attention is paid to parent counseling, child psychotherapy and psychopharmacological treatment. Some basic rules for use of pharmacotherapy with children are provided. (Journal abstract modified)

001973 no author. no address **Computerizing cuts prescribing of psychotropics.** Medical World News. 19(18):11-12, 1978.

The effects of giving pharmacists on-line access to computer memories of prior prescriptions are reported, based on experience at the Los Angeles County, University of Southern California facility. The facility experienced a 32% drop in dispens-

ing of psychoactive drugs after computer based information on prescriptions was made available to the pharmacists. The purpose of the program is to identify patients who doctor shop or persuade individual physicians to prescribe excessive quantities of mood altering drugs. Successful results since the system was implemented in 1967 were reported to a Congressional committee. Significant savings to the California Medicaid program resulted.

001974 Olatawura, M. O. Department of Psychiatry, University of Ibadan, Ibadan, Nigeria **The effects of psychotropic drugs in different populations.** Bulletin of the World Health Organization (Geneve). 56(4):519-523, 1978.

The influence of nutritional, metabolic, genetic, cultural, and ecological factors on the effectiveness of psychotropic medication is discussed. It is suggested that health differences between cultures might be related to differences in optimal uses and dosages of psychotropic drugs. Such differences would particularly apply to developing countries. Psychotropic drug effectiveness and poor nutritional status are believed to be related in terms of sensitivity mechanisms and immunity, while the presence of concurrent diseases may influence toxicity. In addition, hereditary factors such as bodyweight can also influence effectiveness of psychotropic medication. 17 references.

001975 Ostroff, Robert B.; Docherty, John P. Connecticut Mental Health Center, Room 203, 34 Park Street, New Haven, CT 06508 **Tricyclics, bioequivalence, and clinical response.** American Journal of Psychiatry. 135(12):1560-1561, 1978.

A case report illustrating the clinical importance of plasma drug levels and bioequivalence in the use of tricyclic antidepressants is presented. Evidence that a minimum plasma level of a tricyclic compound is essential to therapeutic response is cited, and the fact that the various marketed brands of the same oral tricyclic antidepressant may not have comparable therapeutic effects is discussed. It is suggested that the patient may be best served by having his dosage adjusted and maintained on a given proprietary compound. 7 references.

001976 Palmer, Gene C. Dept. of Pharmacology, University of South Alabama College of Medicine, Mobile, AL 36688 **Use, overuse, misuse, and abuse of benzodiazepines.** Alabama Journal of Medical Sciences. 15(4):383-392, 1978.

Patterns of medical use and misuse of benzodiazepines in the United States are traced. Clinically defined uses of benzodiazepine, including mental/anxiety, convulsions, sleep disorders, muscle tension, alcohol withdrawal, and miscellaneous use, are reviewed. Clinical and experimental literature on the following topics are examined: drug dependence, suicide and drug overdose, paradoxical reactions, and birth defects. 85 references.

001977 Pearce, J. M. S. Hull Royal Infirmary, Hull, England **Aetiology and natural history of Parkinson's disease.** British Medical Journal (London). No. 6153:1664-1666, 1978.

The etiology, clinical course, incidence, and treatment of Parkinson's disease are briefly reviewed, and the roles of acetylcholine, GABA, noradrenaline, serotonin, peptidergic neurons, and monoamine oxidases in Parkinson's disease are described. It is noted that drugs may produce Parkinsonism by preventing the action of dopamine in the brain. Phenothiazines and butyrophenones (haloperidol, droperidol) block the postsynaptic dopamine receptor. Although dopamine deficiency is the most important and constant biochemical lesion in Parkinson's disease, it is not the whole explanation of the clinical features, much less the cause of the disease. It is hypothesized that spontaneous and drug induced dyskinesias probably arise from a population of dopaminergic nerve cells distinct from those affected in Parkinson's disease. 24 references.

001978 Perkins, Nancy, Fisher. University of Virginia **Local regulation of dopamine release from striatal and tuberoinfundibular dopaminergic neurons. (Ph.D. dissertation).** Dissertation Abstracts International Ann Arbor, MI, Univ. M-films, No. 7812148, HC$15. MF$7.50. 262 p. 1977.

Local regulation of dopamine (DA) release and synthesis was studied in two areas of rat brain (the striatum and the medial basal hypothalamus), focusing on the ability of neurotransmitter to feedback on a presynaptic autoreceptor and to regulate further release and synthesis of the transmitter in these two dopaminergic neuronal systems. The striatal data support the existence of presynaptic autoreceptors on striatal DA neurons. The DA antagonists (neuroleptics) in addition to DA agonists, also caused a slight inhibition of stimulated transmitter release at low concentrations. Further data are presented to illustrate the complex actions of neuroleptics in the central nervous system and to encourage caution in making interpretations about their site and mechanism of action. The medial basal hypothalamus data suggest that the autoreceptor mechanism is less well developed or nonexistent in this brain area. Further comparisons of the sensitivities of these two dompaminergic structures to other presynaptic regulation were made. Findings indicate different sensitivities to alpha, and cholinergic adrenergic agonists, as well as varying hormonal feedback effects on transmitter release and synthesis. The latter results suggest that DA release and synthesis from the striatum may be mainly regulated by neuronal feedback, whereas hormonal feedback regulates release and synthesis from the medial basal hypothalamus. (Journal abstract modified)

001979 Poldinger, W. Chefarzt, Kantonale Psychiatrische Klinik, CH-9500 Wil/St. Gallen, Switzerland **Therapy of extrapyramidal side effects, with particular reference to persistent dyskinesia and lithium tremor.** International Pharmacopsychiatry (Basel). 13(4):230-233, 1978.

At the VI World Congress of Psychiatry held in onolulu, August to September 1977, a paper was presented in which the use of amantadine, bromocriptine, and oxoprenolol in the treatment of extrapyramidal side-effects induced by long-term therapy with psychotropic drugs is reported. In 13 of 27 cases of persistent dyskinesia induced bychronic neuroleptic therapy or its withdrawal, treatment with amantadine (average dose, 300mg) brought good to moderate improvement. In 14 patients who showed no response to amantadine, further treatment with bromocriptine (doses raised gradually to a final daily dose of 15mg) was effective in 4 cases, but the improvement was only moderate. In more than half the cases of initial tremor induced by lithium therapy, oxprenolol in daily doses of 160-240mg produced good effects, and moderate improvement was noted in a few additional cases. In 20 patients with initial tremor due to neuroleptic therapy, the same treatment was unsuccessful in the majority of cases. This is the converse of the experience gained with the classical antiparkinson agents, which have proved more effective against tremor induced by neuroleptics than against lithium induced tremor. 5 references. (Author abstract modified)

001980 Prien, Robert F.; Balter, Mitchell B.; Caffey, Eugene M., Jr. Psychopharmacology Research Branch, NIMH, 5600 Fishers Lane, Rockville, MD 20857 **Hospital surveys of prescribing practices with psychotherapeutic drugs.** Archives of General Psychiatry. 35(10):1271-1275, 1978.

Several recent multihospital surveys of psychotherapeutic drug use are examined, and the limitations of these surveys and the need to develop more adequate information about physician prescribing patterns are discussed. It is concluded that, rather

than the ""scatter gun" broad based short-term surveys discussed, more intensive studies should be undertaken which focus on long-term treatment strategies and reasons for treatment for a carefully selected, well-defined population. Such surveys would provide empirical foundations for examining the quality of drug prescribing practices and would aid in establishing more relevant drug use guidelines, medical education programs, drug utilization review systems, and other programs designed to improve drug prescribing practices. 35 references.

001981 Raynes, Norma V. General Practice Research Unit, Institute of Psychiatry, de Drespigny Park, London, SE5 England **General practice consultation study: some preliminary observations.** Social Science & Medicine (Oxford). 12(4A):311-315, 1978.

The need for an analysis of general practitioner/client interaction as a means of understanding variation in both psychiatric diagnosis and the prescribing of psychotropic drugs is studied. The methodology of the study, a general practice consultation study, is described and some preliminary results are presented. The results confirm the findings in other studies of variance in diagnostic and prescribing patterns and indicate that the patients' initial presenting symptoms cannot account for all of the variation found in the diagnostic and prescribing behavior of general practitioners. 11 references. (Author abstract)

001982 Rickels, Karl. 203 Piersol Building, University Hospital, 3600 Spruce Street, Philadelphia, PA 19104 **Use of antianxiety agents in anxious outpatients.** Psychopharmacology (Berlin). 58(1):1-17, 1978.

The use of antianxiety agents in nonpsychotic anxiety states is reviewed, with major emphasis placed on findings from clinical trials performed by the Psychopharmacology Research Unit at the University of Pennsylvania. Initial consideration is given to the relative efficacy of available antianxiety agents. A comparison between the newer anxiolytics and the traditional barbiturates concludes that barbiturates are: 1) not as effective as the newer antianxiety agents; 2) produce more side-effects; 3) are more toxic; 4) have a higher suicide potential; and 5) are more addicting. Therefore, there seems little reason to prescribe barbiturates when reduction of anxiety is the therapeutic goal. Also reviewed are patterns of neurotic symptomatology found in nonpsychotic anxious patients and the way in which this symptomatology can be influenced by pharmacologic intervention. Clinical improvement in anxious patients was determined by means of the Hopkins Symptom Checklist administered at the end of clinical drug trials (4-6 weeks) and at followup (6 months). Also discussed are some of the many nonspecific factors that affect improvement with drug treatment in general and with the benzodiazepines in particular. It is concluded that many anxious patients are not currently receiving adequate drug treatment, and may require longer periods of drug therapy or supplemental nondrug intervention. 71 references. (Author abstract modified)

001983 Rosenbaum, Alan H. Department of Psychiatry, Mayo Medical School, University of Minnesota, Rochester, MN 55901 **Pharmacotherapy for tardive dyskinesias.** Psychiatric Annals. 9(4):51, 54-57,61, 1979.

Causes, distinctive features, and treatment of tardive dyskinesias are discussed. Tardive dyskinesias are stereotyped, repetitive, involuntary movements of the mouth, lips, and tongue, sometimes accompanied by choreiform movements of the limbs or trunk. The true nature of the disorder has been masked by the administration of antipsychotic drugs. Antipsychotic medications and other drugs, including sympathomimetics, the antihistamines, and tricyclic antidepressants, appear either to induce or to worsen tardive dyskinesias when given in high doses. Alcohol and other factors thought to be a source of the syndrome are listed. The main disorder underlying the symptoms seems to be a dopaminergic-cholinergic imbalance. The relation of the syndrome to the following features is covered: use of antipsychotics, age, depression, organic brain syndromes, and endocrine changes. Attempts at treatment that have been directed toward correcting the dopaminergic-cholinergic imbalance include: agents that suppress, amine-depleting agents, catecholamine-synthesis blocker, alpha agonist, dopamine-depleting agent, reducing serotonin production, blocking reuptake of serotonin and norepinephrine, cholinergic agents, antihistamines, and GABA agonist. A combination of tricyclic antidepressant and lithium has been reported as a new treatment measure. 24 references.

001984 Schmidt, Alexander M. Health Services, University of Illinois Medical Center, 1737 W. Polk St., Chicago, IL 60612 **Comment.** American Journal of Psychiatry. 135(9):1057-1058, 1978.

The comments of a former Food and Drug Administration (FDA) commissioner of food and drugs on an article concerning the medical, and in particular the psychiatric profession's response to FDA proposed regulations, are presented. The article proposed a model for preserving professional autonomy and serving the interests of the psychiatric profession and its patients. It is asserted that the proposed actions are valid and should be pursued. The reluctance of the medical profession's response to report dangerous medications and the subsequent Congressional hearings are blamed for excessive FDA involvement in drug regulation. Greater professional participation in the legislative process and advisory committee sessions are recommended.

001985 Siris, Samuel G.; van Kammen, Daniel P.; Docherty, John P. Affective Disorders Research Service, New York State Psychiatric Institute, 722 W 168th St. New York, NY 10032 **Use of antidepressant drugs in schizophrenia.** Archives of General Psychiatry. 35(11):1368-1377, 1978.

The therapeutic efficacy of tricyclic antidepressants and monoamine oxidase inhibitors in schizophrenic patients is reviewed. In general, the use of these drugs alone was found not to be warranted in schizophrenia, except perhaps in the socalled pseudoneurotic subgroup. In most cases, cobinations of antidepressants and phenothiazines were not more beneficial than phenothiazines alone. In particular, the conditions of agitated patients and patients with histories of social deviance dating back to childhood were often made worse by the addition of an antidepressant. However, when the patients who demonstrated symptoms of clinical depression other than anergia were isolated from several of these studies, it was found that they constitute a subgroup that is often benefited by use of these combinations. Favorable and unfavorable clinical response patterns are discussed, and recommendations for future research are outlined. 175 references. (Author abstract modified)

001986 Stepney, Rob. Dept. of Medicine, University of Cambridge Clinical School, Cambridge, England /**Psychological factors in the maintenance of smoking behaviors.**/ Homo fumens. World Medicine (London). 14(6):49-50, 1978.

Psychological factors contributing to the maintenance of smoking behaviors, despite often rigorous proscription and the severe health risks, are examined. While factors such as curiosity, imitation, and peer pressure may be involved in the initiation of smoking, it is likely that maintenance of smoking is associated with a variety of psychological effects mediated by nicotine. A number of studies have indicated that smoking can

have both stimulating and sedative effects. Smoking has been found to induce arousal, reduce distractibility, and facilitate recall. Smaller doses appear to have a stimulant effect, while larger doses seem to have a depressant effect. Further, there is some evidence to indicate that habitual smokers use nicotine intake to manipulate mood states. Other research has shown nicotine to have stress attenuating effects in both animals and man. Thus, for the smoker, short-term benefits may outweigh the long-term risks. Implications for modification of smoking are briefly examined. 2 references.

001987 Sulser, F. Vanderbilt University, School of Medicine, Nashville, TN **Preclinical psychopharmacology and therapeutics: a pharmacologist's point of view.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 165-169).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, a pharmacologist's view of needs in preclinical training in psychopharmacology and therapeutics was presented. It is suggested that the ideal institutional setting for research, training, and education in psychopharmacology is a center with an integrated program of basic pharmacological and clinical pharamacological research. Comprehensive pharmacological information on the mode of action of psychotropic drugs can guide therapeutics in the clinic and astute observation in the clinic is essential to providing a relevant basis for the research strategy of the pharmacologist. The synergistic interaction between disciplines in preclinical and clinical pharmacology generates information for a better understanding of the mode of action of psychotropic drugs, provides a stimulating milieu for education, and paves the way for new approaches to the study of the psychobiology of mental disorders. 24 references. (Author abstract modified)

001988 Taub, John M. Sleep Laboratory, Department of Psychology, St. Louis University, 221 N. Grand Blvd., St., Louis, MO 63103 **Behavioral and psychophysiological correlates of irregularity in chronic sleep routines.** Biological Psychology (Amsterdam). 7(1/2):37-53, 1978.

Behavioral and psychophysiological correlates of irregularity in chronic sleep routines were studied in two groups of 18 male students each, classified as either irregular sleepers or control subjects. Measurements were obtained from an auditory reaction time task, a mood adjective check list, sublingual temperature and pulse rate 30 min after awakening in the morning, at noon, in the afternoon, and in early evening following an EEG recorded 12 to 8 a.m. sleep night. At various points in the diurnal cycle irregular sleepers compared with controls had substantial lower levels of pulse rate and body temperature, but significantly longer reaction times. During the four time periods negative affects were considerably greater and positive mood states significantly less in the irregular sleepers. The irregular sleepers averaged considerably less stage 4, and REM, but more stage 2 and transitions between sleep stages. Results indicate that relatively lowered levels of physiological arousal indices, psychomotor performance and subjective mood are associated with irregularity in chronic sleep routines of young adult males. 49 references. (Author abstract modified)

001989 van Kammen, Daniel P. Section on Neuropsychopharmacology, Biological Psychiatry Branch, NIMH, Bethesda, MD 20014 **Lithium, a potential treatment of drug abuse? A review. (Unpublished paper)** Bethesda, MD, NIMH, 1978. 10 p.

The literature on stimulants, opiates, and barbiturates in animals and man with and without lithium treatment is reviewed in order to assess the usefulness of lithium in drug abuse treatment. Differences in methodology and species have created conflicts in the available animal data. There are no long-term double-blind studies in man supporting the concept of lithium's usefulness in drug abuse treatment. Single dose studies of stimulants in man indicate that lithium pretreatment attenuates some of the euphoria and activation. Single dose studies of opiates and barbiturates do not indicate a therapeutic use for lithium in abusing patients. Evaluation of prophylactic use is frequently hampered by unreliable food and lithium intake in addict populations with equal risks of lithium intoxication or underdosage. Lithium may be of help to patients who are self-medicating their undiagnosed affective disorder. 41 references. (Author abstract modified)

001990 Villeneuve, A. no address **Symposium 7: therapy resistant patients and safety margin problems.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 297-350).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, symposium 7 was concerned with therapy resistant patients and safety margin problems. Genetic, metabolic, psychopathological, social, and other factors responsible for resistance to psychotropic drug treatment are reviewed. Specific topics of discussion include individual reactivity to psychotropic drugs, chlorpromazine resistant chronic schizophrenia, neuroleptic resistant psychotic disorders, drug resistant affective disorders, and the limitations of anxiolytic agents.

001991 Vinai, O. 182 00 Praha 8-Koblisy, k ovcinu 1519, Czechoslovakia **/The significance of endorphins and gamma-aminobutyric acid in clinical psychopharmacology./** Vyznam endorfinu a gamma-aminomaslene kyseliny pro klinickou psychofarmakologii. Ceskoslovenska Psychiatrie (Praha). 74(2):98-107, 1978.

An overview of research in the chemotherapy of mental disorders, particularly as related to the endorphin transmitter system is presented. Biochemical and psychopharmacological studies with implications for schizophrenia and endogenous depressions are reviewed. These findings suggest that the endorphin system may play a role in the pathogenesis of these disorders. The interaction between the experience of stress and anxiety and endorphin production is discussed as a possible etiological factor of psychoses. Finally, implications of these findings for psychopharmacological management of a variety of psychoses and anxiety neurosis are discussed. 36 references. (Author abstract modified)

001992 Walker, J. Ingram; Brodie, H. Keith H. Department of Psychiatry, Duke University, Durham, NC 27706 **Lithium: a guide to its use.** Journal of Continuing Education in Psychiatry. 39(6):39, 42-43, 46, 1978.

Basic principles concerning the use of lithium, a drug used to treat manic-depression for over 25 years, are discussed. It is noted that, while lithium does not cure the illness, it does regulate mood swings. A checklist for patients taking lithium is offered.

001993 Willer, J. C.; Dehen, H.; Boureau, F.; Cambier, J. Laboratory of Clinical Neurophysiology, Hopital Saint-Antoine, F-75012 Paris, France **Congenital insensitivity to pain and naloxone.** Lancet (London). No. 8092:739, 1978.

In reference to a study by Yanagida (1978), congenital insensitivity to pain as a possible result of permanent hyperactivity of an endogenous morphine like system is discussed in a letter to the editor. While the Yanagida study contained some minor methodological problems and while Yanagida's subjects presented with congenital insensitivity to pain with anhydrosis, as op-

posed to classical congenital insensitivity to pain, the finding of enhanced nociceptive evoked potentials in Yanagida's cases is consistent with the hyperactivity hypothesis and prompts questions about the relations between the endogenous opiates and small afferent fibers and the small primary sensory neurons. 7 references.

001994 Williams, Paul. General Practice Research Unit, Institute of Psychiatry, De Crespigny Park, Denmark Hill, London SE5 8AF, England **Physical ill-health and psychotropic drug prescription -- a review.** Psychological Medicine (London). 8(4):683-693, 1978.

The research literature on the conditions of psychotropic drug prescription is reviewed and the practice of prescribing psychotropic drugs for known physical illnesses is discussed. Evidence of substantial physical morbidity in patients who receive psychotropic drugs, as well as evidence that these drugs are not infrequently prescribed for patients with known physical illness are reported. Minor tranquillizers are the psychotropic drugs most commonly prescribed, and the category of physical illness most likely to be associated with psychotropic medication is cardiovascular disease. 38 references. (Author abstract modified)

001995 Wittenborn, J. R. no address **Symposium 3: international standards in psychopharmacology.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 932 p. Vol. 1. (p. 117-153).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the third symposium was concerned with international standards in psychopharmacology. The work of the Ad Hoc Committee for the Clinical Assessment of Psychotropic Drugs is reviewed, with special emphasis on the collaborative nature of this effort to develop international guidelines for the clinical investigation of psychotropic substances. Standards for the clinical study of antianxiety drugs, andtidepressants, antipsychotics, and the toxic consequences of psychotropic drugs are discussed.

001996 Youdim, M. B. H.; Sharman, D. F.; Lovenberg, W.; Lagnado, J. R. no address **Essays in neurochemistry and neuropharmacology, vol. 1.** New York, Wiley-Interscience (John Wiley & Sons), 1977. 195 p. $21.50.

The first of a projected series of volumes on current specific problems in neurochemistry and neuropharmacology contains six articles on research in the neurosciences. The following topics are discussed: 1) the role of methylating enzymes in the synthesis and catabolism of compounds relevant to the nervous system, 2) the role of the sulfated amino acid taurine in the mammalian central nervous system (CNS), 3) the molecular basis of transsynaptic regulation of the synthesis of macromolecules, 4) the role of aldehyde metabolites of biogenic amines in the brain, 5) CNS and pituitary effects of hypothalamic peptides and melanocytes-stimulating hormone, and 6) neurochemical research in Huntington's chorea.

001997 Youdim, Moussa B. H.; Lovenberg, W.; Sharman, D. F.; Lagnado, J. R. Technion-Israel Institute of Technology, School of Medicine, Haifa, Israel **Essays in neurochemistry and neuropharmacology.** New York, John Wiley & Sons, 1978. 288 p. Vol. 3.

Aminergic neurotransmitters, brain proteins, and memory are explored in essays on brain chemistry and pharmacology. Topics discussed include: feedback regulation of central monoaminergic neurons as seen in single cell recording studies, the chemical control of neuronal growth, platelets as models for monoaminergic neurons, the effects of dietary tryptophan and its peripheral metabolism on brain 5-hydroxytryptamine synthesis and function, neurotransmitter interactions related to central dopamine neurons, and the role of proteins in memory.

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